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# ARTILLERY EMPLOYMENT AT THE BATTLE OF GETTYSBURG

A thesis presented to the Faculty of the U.S. Army  
Command and General Staff College in partial  
fulfillment of the requirements for the  
degree

MASTER OF MILITARY ART AND SCIENCE

by

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Fort Leavenworth, Kansas  
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## 19. ABSTRACT

This thesis is an historical analysis of the Union artillery at the Battle of Gettysburg. It examines the significance of the Union artillery's contribution to the Federal victory.

This study explores all aspects of the tactical employment of the Union artillery on the first and last days of the battle. A brief description of the evolution of artillery organization in the Army of the Potomac prior to the battle of Gettysburg is included. This is followed by the chronological presentation of the tactical employment of artillery during the battle. First its employment in the meeting engagement on 1 July is examined, followed by a study of its use on the final and decisive third day when Union forces fought a set-piece defensive battle.

Among the conclusions arrived at during the course of this study are these: That the Army of the Potomac's corps artillery brigades and army artillery reserve proved to be responsive and efficient organizations in fulfilling their fire support mission, and when coupled with the skillful use of artillery and aggressive leadership by the army's Chief-of-Artillery, Brigadier General Hunt, were crucial to the successful employment of the Union artillery forces.

This study concludes that the Union artillery under the command of Brigadier General Henry Hunt had a decided and positive influence on the Federal victory by successfully employing its corps artillery brigades and army artillery reserve as part of a combined arms force.

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The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

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## ABSTRACT

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## CHAPTER 1

### INTRODUCTION

Referred to as the King of Battle, the Field Artillery has evolved into a powerful member of today's combined arms team. The history of this evolution is a long and colorful one. Under the tutelage of Napoleon artillery was raised to a prominence equal to the other military arms found on the battlefield. A former artilleryman, Napoleon recognized the potential that massed firepower offered the field commander if employed properly. As his armies demonstrated time and again, massing the firepower of his artillery at the critical time and place provided the necessary tactical advantage for his maneuver forces to breach the enemy lines and secure the victory.<sup>1</sup> As the American Civil War approached, changes were occurring in the world that would have a pronounced affect on the role of artillery. Yet when the war became a reality it was evident immediately that artillerymen were not ready to deal with these changes, and would have to adapt if their arm was to survive and continue to be a contributing member of the combined arms team.

This study examines the artillery's adaptation to these changes by analyzing the performance of the Army of the Potomac's artillery during the Battle of Gettysburg. This

chapter will introduce the reader to Civil War artillery in sufficient detail to provide an understanding of its material and organizational capabilities. Chapters Two and Three examine how the Union artillery was employed at Gettysburg. These chapters include a description of the artillery organization for combat, and a summary of the combat action during the first and third days of the battle, focusing on the critical combat actions during which artillery played a major role. Chapter Four concludes the study by providing a final analysis of the contribution of the Union artillery to the outcome at Gettysburg.

Napoleon maximized the potential of artillery as an offensive weapon. His artillery could range the enemy infantry easily without placing itself at risk. While the effective range of the artillery canister projectile was 300 to 400 yards, the smoothbore musket used by opposing infantry was effective to a range of no more than 150 yards. This situation had changed by the opening of the Civil War. The change radically altered how artillery was employed and the missions it performed.

The American Civil War was the first American war in which the opposing infantries were armed almost entirely with rifled small arms.<sup>2</sup> The presence of rifles in the hands of opposing infantry affected artillery in two ways. One was to place artillerymen at risk of being wounded or killed when they employed their guns close enough to opposing infantry to fire canister. The Springfield and Enfield rifles, those most

commonly used at Gettysburg, were a threat at a range of 300 yards, closely rivaling the maximum effective range of canister. Therefore, the emplacement of cannon to fire canister, especially in the offense, proved to be an extremely risky proposition for gunners. The necessity for self-preservation forced artillerymen to position their guns away from the enemy infantry. This action adversely affected the effectiveness of artillery fire as it took the guns out of effective canister range and reduced the accuracy of all other projectiles.<sup>3</sup> In addition, the greatly increased range and accuracy of the rifle forced the infantry soldier, particularly in the defense, to seek cover from enemy rifle fire, providing protection not only from enemy rifles, but also from enemy artillery.<sup>4</sup>

Artillery in the Civil War was of two types, foot artillery and field artillery. Foot artillery referred to those weapons and personnel used to conduct sieges, protect garrison facilities and coastal fortifications. Weapons used by the foot artillery were either large fixed cannon, or large semi-mobile cannon used in siege operations. Generally, even the cannon in the foot artillery which could be moved were so large and heavy that it was not possible for them to maneuver on the open battlefield. This was the responsibility of the field artillery, or light artillery as it was sometimes called. It was the field artillery's responsibility to maneuver on the battlefield and provide support to the

maneuver forces.<sup>5</sup>

Field artillery was further divided into the horse artillery and mounted artillery. Horse artillery typically was employed in support of cavalry operations where it was required that the artillery be as mobile as the unit it supported. To do this the gun crews rode on horseback alongside their guns. Men in the mounted artillery either walked alongside their guns, or rode atop the ammunition chests if the situation required.<sup>6</sup> During the battle at Gettysburg only field artillery units were decisively engaged, although one battery of 20-pounder Parrott rifles, a relatively heavy weapon, accompanied the army to Gettysburg.

Rifled barrels were introduced for artillery weapons alongside the rifled musket for infantry. This afforded the artillery many of the same benefits enjoyed by the riflemen. Increased range and accuracy were two of these. Rifling enabled the artillery cannon to fire projectiles that were oblong in shape. This meant larger projectiles could be fired out of the same size bore found on a smoothbore cannon firing spherical ammunition. The oblong projectile was more aerodynamically shaped, offering less wind resistance.<sup>7</sup>

A wide variety of artillery weapons were used during the Civil War, many of which were developed in response to wartime needs. Both smoothbore and rifled artillery pieces saw action throughout the war, to include the battle at Gettysburg. Prior to the war the 8-pounder smoothbore gun was the most common artillery weapon in use by the field

artillery. It had seen considerable action in the Mexican War.<sup>8</sup> By the beginning of the Civil War, the 12-pounder smoothbore gun, Model 1857, commonly referred to as the Napoleon, had become the favorite smoothbore cannon. In the Army of the Potomac, to a large extent, it replaced the 6-pounder smoothbore and the 12-pounder smoothbore, Model 1841-44, a gun weighing over 500 pounds more than the Napoleon.<sup>9</sup>

The most common smoothbore gun used by the Army of the Potomac at Gettysburg was the 12-pounder Napoleon.<sup>10</sup> The most widely used rifled gun was the 3-Inch Ordnance rifle and, to a lesser extent, the 10 and 20-pounder Parrotts. Of the latter, the 3-Inch Ordnance rifle was preferred. Its wrought iron construction was stronger and more reliable than the cast iron Parrotts, especially those of the larger calibers which often exploded. The 5th New York Battery reported that one of its 20-Pounder Parrotts exploded during the cannonade which preceded Pickett's charge on 3 July, fortunately injuring no one.<sup>11</sup> It is important to note that smoothbore and rifled cannon each had their specific advantages on the battlefield. The smoothbore was a more capable weapon to defend against an infantry assault. Its canister projectile was larger and more effective than the canister round found with the rifled guns due to its larger bore diameter.<sup>12</sup> The rifled gun's better accuracy and longer range proved to be more effective in a counter-battery role.

The counter-battery mission was usually given to those batteries which consisted primarily of rifled cannon.<sup>13</sup>

Artillery cannon were line-of-sight direct fire weapons. The lack of sophisticated fire control systems allowed gunners to engage effectively only those targets they could see. The extended range of the rifled gun was a capability that was difficult to exploit. The difficulty in observing the round impacting at maximum range prevented using the rifled gun's full range capability. For this same reason firing at night was considered to be a waste of ammunition and was normally not done.<sup>14</sup> Appendix A identifies the primary artillery weapons used during the Civil War and their range capabilities.

The South's limited industrial capacity, in conjunction with the North's blockade of the South, forced the Confederate artillery to use whatever guns they could acquire. This meant that some four-gun Confederate batteries contained up to three different calibers.<sup>15</sup> This created a significant logistical problem by requiring that a single battery maintain several different types of ammunition on hand. At the beginning of the Civil War the Army of the Potomac organized its batteries intentionally with a mix of calibers. The most common mix was the placement of two rifled cannon with four smoothbore Napoleons. This was intended to allow the battery to place effective counter-battery fire on enemy artillery units while reserving the Napoleons for close in fighting where its superior canister projectile was highly

avored. As the war progressed, batteries in the Army of the Potomac were organized with only one type of gun per battery. Other Union armies, such as the Army of the Cumberland, still had batteries that retained a mix of gun types, most likely a result of the Army of the Potomac's favored status in the Union in terms of receiving new equipment.

A variety of projectiles were used throughout the war. The most common were canister, shot, shell, and case. Canister was by far the most effective projectile against assaulting infantry, but it was limited by an effective range of not more than 400 yards.<sup>18</sup> A canister round consisted of approximately twenty-seven solid metal balls packed in a tin can atop a powder charge. When fired the tin outer shell sheared away and the metal balls inside assumed a trajectory similar to a modern day shotgun shell. When the situation required, gunners would sometimes load a double or triple charge of canister to increase further the number of lethal projectiles fired at one time. Shot was a solid metal ball used for knocking down fortifications or buildings. Shot contained a considerable amount of kinetic energy as it traveled downrange. Shell was a hollow metal ball filled with an explosive. It was detonated by a burning time fuze. If the time fuze operated properly the outer metal casing would fragment upon detonation. Case was similar to shell but it included numerous metal balls within the hollowed out center. A powder charge was then inserted into the center designed to

detonate the projectile once the time fuze functioned. The metal balls added to the fragmentation effect by creating additional lethal fragments. In addition to the standard projectiles already described, all of which were used by both sides at Gettysburg, other types of projectiles found their way onto the battlefield. Warren Lee Goss, a private in Hancock's II Corps at Gettysburg, reported that during the cannonade on the third day Rebel batteries were using railroad iron and other missiles along with the standard projectiles.<sup>17</sup>

The technology of the time, coupled with wartime needs, created reliability problems with ordnance. The most pronounced problems were with fuzes. The Confederates were plagued especially by these problems, primarily as a result of poor quality control during the manufacturing process. The Bornmann time fuze, used by both sides, proved on several occasions to be virtually useless.<sup>18</sup> An example of this was at Chancellorsville where the Confederates reported only one in fifteen shells detonated properly.<sup>19</sup> On other occasions they would detonate the round prematurely, endangering friendly forces.<sup>20</sup> A related problem existed with contact fuzes fired from rifled guns. Although the rifling enabled the use of spin-stabilized, conical shaped projectiles which assured the gunner of a point-first contact with a target, the point detonating fuze would allow the round to bury itself in soft dirt before it would function. Many times the round would detonate at a depth that seriously retarded the



effectiveness of the round.<sup>21</sup>

The organization of artillery units proved to be a continual problem for the Army of the Potomac. As the war progressed the armies experimented with a series of artillery organizations. The basic artillery organization at the beginning of the Civil War was the battery. Six-gun batteries were preferred, but four-gun batteries did exist, primarily in the South.<sup>22</sup> Four guns in a battery instead of six was usually the result of a shortage of guns rather than a matter of choice.

Distribution of artillery assets in support of maneuver units on the battlefield was the most controversial aspect of artillery organizations. At the beginning of the war the artillery was organized in accordance with the army's experiences in the Mexican War.<sup>23</sup> Batteries were assigned at the brigade and regimental level. This resulted in the piecemeal commitment of artillery at the discretion of the various maneuver commanders. There existed no viable means of centralized control or concentration of artillery. It also resulted in artillery remaining idle if its supported unit was not engaged.

Attempts at correcting this situation were not made until after the First Battle of Bull Run. This battle revealed the problems with the uncoordinated employment of artillery on the battlefield. When General McClellan took command of the Army of the Potomac after Bull Run he

appointed Major William F. Barry as his Chief-of-Artillery. Assisting Major Barry was Major Henry J. Hunt, the officer destined to replace Barry, and eventually become a key player in the battle at Gettysburg. Barry, assisted by Hunt, developed a set of principles to be used in establishing artillery organizations in McClellan's army. The principles established by Barry and detailed in the Official Records of the War of the Rebellion are in Appendix B.

The establishment of the artillery reserve was especially significant. It was an organization similar to the reserve used by Napoleon. Although its size fluctuated from its inception to the battle at Gettysburg, it consisted of approximately one-third of the army's guns.<sup>24</sup> Its mission included not only supplementing the fires of the artillery supporting the maneuver forces, but it could also perform special missions for the army commander when it was not feasible to withdraw a battery in support of a division or corps.

It is obvious that the Army of the Potomac was concerned with using the artillery in the most effective manner possible. Its offensive potential was certainly reduced compared to its exploits under Napoleon, but its destructive capabilities were recognized as the Army of the Potomac sought to create the most efficient organization for use on the battlefield. When the Army of the Potomac and the Army of Northern Virginia faced each other at Gettysburg, the Federals had with them a new organization, one which they

hoped would finally yield the results sought on previous battlefields.

## CHAPTER 1

### ENDNOTES

<sup>1</sup>Richard A. Preston and Sydney F. Wise, Men in Arms (New York: Holt, Rinehart and Winston, 1979), 191.

<sup>2</sup>Ibid., 247.

<sup>3</sup>Vardell E. Nesmith, The Quiet Paradigm Change: The Evolution of the Field Artillery Doctrine of the United States Army, 1861-1905 (Ann Arbor, MI: University Microfilms International, 1979), 16.

<sup>4</sup>Ibid.

<sup>5</sup>William H. Frank, William F. Barry, and Henry J. Hunt, Instruction for Field Artillery (Washington, D.C.: Government Printing Office, 1864), 1.

<sup>6</sup>Ibid.

<sup>7</sup>Warren Ripley, Artillery and Ammunition (New York: Promontory Press, 1970), 15.

<sup>8</sup>Harold L. Peterson, Round Shot and Rammers (Harrisburg, PA: Stackpole Books, 1969), 91.

<sup>9</sup>Ibid., 92.

<sup>10</sup>Jack Coggins, Arms and Equipment of the Civil War (Garden City, NY: Doubleday and Company, Inc., 1962), 61.

<sup>11</sup>U.S. Department of War, The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies (Washington, D.C.: Government Printing Office, 1880-1901), Series I, Volume XXVII, Part 1, 891.

<sup>12</sup>Peterson, 95.

<sup>13</sup>Nesmith, 21.

<sup>14</sup>Coggins, 62.

<sup>15</sup>Ibid., 64.

<sup>16</sup>Ibid., 62.

<sup>17</sup>Warren L. Goss, Recollections of a Private (New York: Thomas Y. Crowell and Co., 1890), 213.

<sup>18</sup>Ripley, 27.

<sup>19</sup>Coggins, 62.

<sup>20</sup>Bruce Catton, Glory Road (New York: Doubleday and Company, Inc., 1952), 63-64.

<sup>21</sup>Coggins, 64.

<sup>22</sup>Ibid., 63.

<sup>23</sup>Nesmith, 23.

<sup>24</sup>Ibid., 36.

## CHAPTER 2

### GETTYSBURG - THE FIRST DAY

The selection of the countryside surrounding the small farming community of Gettysburg for the pivotal battle between the Army of the Potomac and the Army of Northern Virginia was a choice which reflected the part that chance plays in war. Neither predetermined nor preplanned, both armies converged on this small Pennsylvania town prepared to secure the victory each so desperately needed. The North, stinging from its defeat at Chancellorsville, anxiously sought a victory to quell the rising activity of the peace party at home. The Army of the Potomac's superior numbers both in personnel and equipment had not yet yielded the expected results as it had conducted several laborious campaigns under the command of a succession of commanders noted for their ineptitude and cautious prosecution of the war.

The Army of Northern Virginia was also under pressure because this campaign was conducted on Union territory. Short of supplies needed to sustain the war, General Lee's decision to move his army north had been based not only on the necessity to locate supplies for his army but, by taking the war to the north and threatening Baltimore, Philadelphia, Harrisburg, and possibly Washington, the South hoped to force

the North to negotiate an end to the war on terms favorable to the Confederacy. It was also felt that a victory in the north was needed if there was to be any hope of securing active foreign intervention on behalf of the South.<sup>1</sup>

In their continuing search for the most effective and efficient means of employing artillery, significant changes had been made to both armies' artillery organizations following Chancellorsville. In the Army of the Potomac there was an attempt to place at least some of the blame for the loss at on the artillery reserve which, it was said, remained idle while infantry units waited for artillery support. Actually, many of the artillery reserve's batteries were taken from the reserve and given to the infantry divisions before the battle. Those units remaining in the reserve consisted primarily of 20-pounder Parrott rifles, whose size and weight made them impractical for use in the dense woods where the battle took place. The distribution of the lighter and more mobile artillery units from the reserve to the divisions had resulted in many of these batteries remaining idle, while others fought for their lives. The tendency for infantry generals jealously to hold onto any attached artillery, a reflection of the historical use of artillery, combined with the loss of tactical command authority by the army's Chief-of-Artillery, Brigadier General Henry J. Hunt, were the root causes of the poor artillery support rendered at Chancellorsville.<sup>2</sup>

After Chancellorsville General Hooker recognized his mistake, and restored General Hunt to his former position of authority as the need for more centralized control of artillery had become apparent. The need to prevent the piecemeal employment of artillery batteries, plus the requirement to employ artillery assets to weight the critical sector, prompted the final reorganization of the Army of the Potomac's artillery before Gettysburg.

The attrition of Union divisions had left the corps as the basic tactical unit of the Army of the Potomac. Hunt therefore took the batteries away from the divisions and formed them into brigades which supported the corps. This artillery brigade organization was formerly adopted by the army on 12 May 1863 as published in Special Orders No. 129 (Appendix C).<sup>3</sup> Under this new organization each infantry corps was to have one artillery brigade, the cavalry corps two, and the artillery reserve five. On the average each brigade had five batteries of six guns each, making it closer in size to a present day battalion. It is believed that the primary reason Hunt chose to call this new organization a brigade was to secure a rank commensurate with the level of responsibility which accompanied the command of infantry brigades. Hunt had long fought the disparity in the rank structure between the artillery and the other branches. The frontage of a battery in position on the battlefield approximated that of an infantry regiment with the firepower to match. As brigades in the Army of the Potomac had from

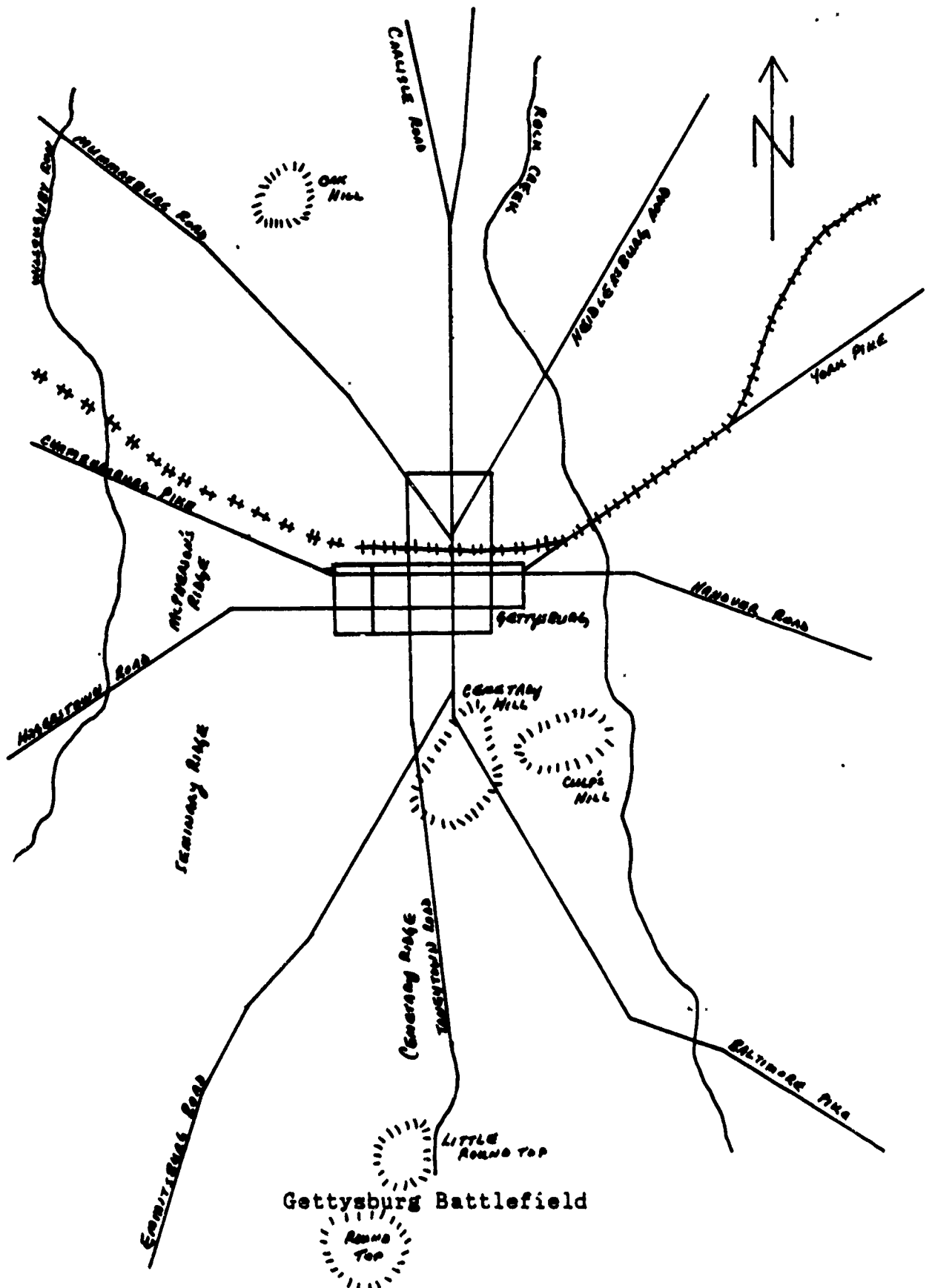


three to six regiments, with the majority having five, it is easy to understand why Hunt believed that the artillery brigade was equivalent to an infantry brigade, and therefore why its commander should wear the appropriate rank.

Unfortunately, in spite of all his efforts concerning this matter, the corps' artillery brigades marched to Gettysburg under the command of two colonels, one lieutenant colonel, one major, nine captains, and one lieutenant.<sup>4</sup>

The Army of Northern Virginia went in the opposite direction in its artillery reorganization. Believing, as some had in its Union counterpart, that too many guns remained idle when assigned to an army reserve, the reserve artillery was disbanded.<sup>5</sup> The scarcity of artillery weapons, coupled with the lack of a strong Chief-of-Artillery with command authority, seemed to justify this change. All artillery was distributed to the corps, with one battalion attached to each division, and two battalions for a corps reserve. Confederate battalions were somewhat smaller than the Union brigade. Each battalion generally had four batteries of four to six guns each. The relegation of all artillery support to the corps, and the placement of the army's Chief-of-Artillery, Brigadier General William N. Pendleton, in a position of being only an advisor to the army commander, was to have a dramatic impact on the effectiveness of Confederate artillery at Gettysburg.<sup>6</sup>

In late June elements of both armies converged on Gettysburg, unaware of each other's exact location and



disposition. Around midday on 30 June, Major General John Buford's cavalry division, consisting of two brigades of cavalry and one battery of horse artillery, entered the town. Upon arriving General Buford learned that Confederate soldiers had been in the town earlier in the day. They had since departed to the west. After moving a short distance to the west of Gettysburg on the Cashtown road, or Chambersburg Pike as it is sometimes called, General Buford's forces came under small arms fire from Confederate infantry. Aware that infantry instead of cavalry could indicate the presence of a large force, General Buford immediately sent word to General Pleasonton, commander of the Cavalry Corps, and deployed scouting parties throughout the remainder of the day and night in an effort to determine the extent of the Confederate force he had encountered.

Shortly after daybreak on 1 July General Buford was informed by couriers that enemy infantry was moving toward Gettysburg on the Cashtown road. Recognizing the strategic location of the crossroads town, and the defensible terrain to the west and south, General Buford decided to establish a defense and hold until relief came from General Reynold's I Corps.

The only artillery assigned to General Buford's command was Battery A, 2nd U.S. Artillery, commanded by Lieutenant John H. Calef. Lieutenant Calef's battery consisted of six 3-Inch Ordnance rifles. Although accurate at ranges a smoothbore Napoleon could not match, this gun was

not well suited for close-in fighting against infantry since its canister round was substantially smaller than the larger bored Napoleon. Initially Lieutenant Calef was given the opportunity to select his own position to support the dismounted cavalrymen along McPherson Ridge. After he had moved his battery into position, General Buford directed him to leave one section, a section consisting of two guns, north of the Cashtown road, one section to the south of the road, and his third section approximately 600 yards south of the road to cover an open field beyond McPherson Woods.<sup>7</sup> Calef placed his right section on the north side of road, and his left section on the south side. Calef's center section, led by a Sergeant Pergel, moved to the position covering the open field beyond McPherson Woods. No sooner had Calef's center section moved into position when the sound of rifle fire erupted as Buford's pickets encountered advancing Confederate skirmishers of General Hoth's division. The right section, under the command of Lieutenant John W. Roder, fired the first cannon shot of the battle at several mounted horsemen seen observing the action from atop their mounts on the shoulder of the Cashtown road.<sup>8</sup>

Immediately after firing, Calef's battery and the surrounding Union cavalrymen whom they were supporting came under fire from Major William J. Pegram's battalion of artillery.<sup>9</sup> Pegram's battalion of five batteries had taken a position on the north side of the Cashtown road on the west



side of Willoughby Run, a meandering stream running in the valley west of McPherson Ridge. Although a record indicating the exact number and type of guns which comprised Pegram's batteries could not be found, the average Confederate battery at Gettysburg had four guns. As the artillery fire intensified on both sides, so did the small arms fire as Confederate infantry advanced on the cavalrymen. General Buford's cavalrymen and Calef's battery fought Heth's division and Pegram's battalion for over an hour before relief arrived. General Wadsworth's First Division of the I Corps moved onto McPherson Ridge to relieve General Buford's cavalry on orders from General Reynolds.<sup>10</sup> Accompanying General Wadsworth division was the 2nd Maine Battery commanded by Captain James Hall.

The artillery odds were presently in favor of the Confederates. Joining Pegram's battalion was Major David D. McIntosh's battalion consisting of four batteries emplaced opposite Pegram's on the south side of the Cashtown road.

With nine batteries totaling approximately thirty-six guns opposing his one battery of six guns, Lieutenant Calef's situation had indeed become precarious. As General Wadsworth's infantry relieved Buford's cavalrymen, Captain Hall was ordered by General Reynolds to relieve Calef's battery and it was withdrawn by piece to the rear to replenish its ammunition chests and await orders. Meanwhile, Captain Hall, under orders from General Reynolds, moved his battery of six 3-Inch Ordnance rifles into the position previously

occupied by Calef's right section on the north side of the Cashtown road.<sup>11</sup>

The artillery correlation of forces remained unchanged. Captain Hall found himself facing the same Confederate battalions that Calef had opposed, only now the infantry threat was greater as Hall received word of enemy on his right flank from one of his lieutenants who commanded his right section. The lieutenant had already redirected the fire of the center and right sections of the battery, firing double charges of canister into the onrushing Confederate infantrymen coming out of the railroad cut. As this was occurring, Hall noticed that the Union infantry located in and around his position were withdrawing from the area.<sup>12</sup> Believing that if the position was too far forward for the infantry it was certainly too far forward for artillery, without awaiting orders, he instructed his battery to withdraw by section to the rear. Due to the hasty withdrawal by the infantry, rebel infantry was able to move quickly into rifle range. They disabled ten of his horses, and forced Hall to abandon one gun from his last section. Although directed by General Wadsworth to leave the one gun behind, Hall detailed one sergeant and five men to attempt a rescue of the abandoned gun. Unfortunately, all six men were either wounded or captured in the attempt. Wadsworth's orders to Hall as he withdrew were to set up his battery on the heights above Gettysburg and cover the withdrawal of the infantry.<sup>13</sup>

As Captain Hall's battery was conducting its withdrawal, Lieutenant Calef's battery was resupplying its ammunition chests near the seminary, located about one hundred yards south of the Cashtown road on Seminary Ridge. It was here that Calef received new orders from General Buford. The message directed Calef to place one of his guns in a position north of the Cashtown road to fire upon Confederate infantry using the railroad cut as they moved toward the Union lines.<sup>14</sup> Calef immediately sent Lieutenant Roder with one gun from Roder's section to a position where it could enfilade the cut. This gun, using canister, effectively prevented the use of the railroad cut by the rebel forces, if only for a brief time.

It was about this same time that Wadsworth's division successfully recovered some of the previously lost ground. Because Hall's battery had moved to the rear and could not be quickly located, General Wadsworth requested from Colonel Charles Wainwright, the I Corps artillery brigade commander, that he provide a battery to support his division as it went on the offensive. Colonel Wainwright refused, stating he did not want to place a battery up on line until there was infantry available to protect its right flank.<sup>15</sup> Wainwright remembered the situation which had forced the withdrawal of Hall's battery, and did not want a repeat performance.

What occurred next indicates the resourcefulness of Wadsworth. Unwilling to accept Wainwright's refusal as the



final word on artillery support, Wadsworth located Calef and directed him to reoccupy Hall's recently vacated position with his two remaining sections.<sup>16</sup> This placed Calef back into action in essentially the same location he had started the battle earlier in the morning. As soon as Calef's battery moved into position and commenced firing, it quickly became engaged in an artillery duel between Calef's four guns and at least three Confederate batteries totaling about twelve guns. After approximately fifteen minutes, during which the battery sustained twelve casualties, one of the three Confederate batteries moved to a position on Calef's right flank making the position untenable. Calef was forced to withdraw to the rear as he located a position which offered more protection from the rebel batteries.

Upon arriving on the field Colonel Wainwright positioned the three batteries that accompanied him on the east side of Seminary Ridge to await instructions.<sup>17</sup> A member of General Doubleday's staff, Doubleday having assumed command of I Corps after General Reynold's death earlier that day, directed that Wainwright place a battery on McPherson Ridge. Wainwright immediately reconnoitered the proposed site and determined that the position, which was totally without support, would place the occupying battery at risk.<sup>18</sup> No battery was emplaced in the directed position until Doubleday's Third Division, commanded by Brigadier General Rowley, took up positions on McPherson Ridge with Captain James H. Cooper's Battery B, First Pennsylvania Light

Artillery.<sup>19</sup> As General Robinson's Second Division of I Corps moved onto the western slope of Seminary Ridge north of the Cashtown road, Wainwright dispatched Lieutenant James Stewart's Battery B, 4th U.S. Artillery in support.<sup>20</sup>

Wainwright continued his inspection of the Union positions, coming upon Calef's battery still in position firing at around 1 p.m. Realizing that Calef needed immediate relief, he sent for one of his two remaining uncommitted batteries, Battery L, First New York Light Artillery, commanded by Captain Gilbert H. Reynolds. As Reynolds' battery moved up alongside Calef's guns, both batteries found themselves caught in a deadly crossfire from the Confederate batteries positioned to their front and batteries now in position on Oak Hill to their right. Both batteries were forced to withdraw, with Captain Reynolds being severely wounded during the short time his battery was in the position.<sup>21</sup>

As both batteries moved to new positions 500 yards to the rear, General Wadsworth was becoming concerned about the increasing number of Confederate infantry which was opposing his division.<sup>22</sup> In an attempt to secure more artillery support Wadsworth sent for Captain Hall's battery which he had earlier ordered to the rear to cover his withdrawing infantry. Hall's battery moved west along the unfinished railroad bed led by the staff officer sent to locate them. When his battery arrived at the railroad cut north of the Cashtown road it immediately came under fire from Confederate

artillery. Unable to turn around or move off to the side because of the narrowness of the railroad bed and steepness of the cut's sides, Hall ordered his battery to a gallop as the battery moved for a distance of 1200 yards through the cut. Amazingly, the battery sustained no damage or casualties during the movement. After locating a staff officer to determine where he was needed, Hall guided his battery toward McPherson Ridge. Within a short distance he was stopped by a Union orderly who informed Hall that he was heading straight for the Confederate lines. A quick reconnaissance proved the orderly was correct. Hall turned around and moved his battery back toward Seminary Ridge.<sup>23</sup>

At Seminary Ridge he met Colonel Wainwright who mentioned that the gun which Hall was forced to leave behind earlier in the day was still abandoned on the field. Hall quickly took a limber and one sergeant back to McPherson Ridge and recovered the weapon. Out of his original six guns, only three were not disabled. By now the senior officer on the field was the XI Corps commander, General Howard. On Howard's orders Hall's three functioning guns were placed in position on the left of the cemetery, south of Gettysburg.<sup>24</sup>

During the day Colonel Wainwright had overheard instructions to General Doubleday stating the necessity of holding Cemetery Hill at all costs. Wainwright did not know of the existence of Cemetery Hill, and assumed that the conversation was referring to Seminary Ridge.<sup>25</sup> With the situation deteriorating rapidly, and assuming that it was the

Seminary Ridge which had to be held at all costs, Wainwright positioned Cooper's and Steven's batteries on Seminary Ridge. Reynolds' battery, now commanded by Lieutenant George Breck, was positioned south of McPherson Woods, with one section detached to support the left flank of Wadsworth's line. Stewart's battery was sent to support Robinson's division by denying Confederate access to the Cashtown road and the railroad cut.

Soon after the new positions were occupied, Confederate infantry moved out of the woods approximately 500 yards to the front of the Union forces. They moved to the left of the Union line in a double column, finally forming a double line of battle and moving toward the crest. During this movement of the rebel columns the firing of Lieutenant Breck's sections was blocked by the movement of Union infantry immediately to their front.<sup>26</sup> When the rebel lines reached to within 200 yards of Breck's guns, Wainwright had to withdraw the battery to a position behind a stone wall on the crest of Seminary Ridge. Although the first line of Confederate infantry was halted momentarily by the combined fire of the Union infantry and artillery, the second line did not falter. Additional rebel soldiers were deploying off the Cashtown road. Wainwright was unaware that by this time Wadsworth had already ordered Captain Steven's and his battery to withdraw.<sup>27</sup> Still believing it was Seminary Ridge that was to be held, Wainwright instructed his

batteries to remain in position.<sup>28</sup>

Not until Wainwright noticed the Union infantry withdrawing did he order his batteries limbered to the rear for movement toward Gettysburg on the Cashtown road. Infantry traffic on the road forced the artillery to move at a walk. When the road was finally clear of obstructions that would allow movement at a trot, Confederate soldiers were close enough to inflict substantial damage to the batteries, both in equipment and personnel. Once through Gettysburg, Wainwright placed his batteries on Cemetery Hill along with one battery from the XI Corps.<sup>29</sup>

It has been proposed that the Union withdrawal from Seminary Ridge was caused by the collapse of the Union position to the north of Gettysburg. Prior to the arrival of Howard's XI Corps, now under the command of General Schurz who assumed that position when Howard replaced Reynolds as the commander of the field, I Corps forces were spread thin in an attempt to not only stop the Confederate threat from the west, but also the threat posed by General Ewell's forces to the north.<sup>30</sup> By the time XI Corps forces had arrived to assist I Corps, Ewell's troops had already occupied Oak Hill, a piece of key terrain which dominated the less favorable terrain held by Union forces.<sup>31</sup> When Ewell initiated his attack to the south at around 2:30 p.m., the two XI Corps divisions of Generals Schimmelfennig and Barlow had just deployed in the area between the Mummasburg and Harrisburg roads north of town.<sup>32</sup> Accompanying each of these divisions

was one battery, with the three remaining batteries of the corps artillery brigade held in reserve.<sup>33</sup>

The first XI Corps battery which saw action was Battery I, First Ohio Light Artillery, commanded by Captain Hubert Dilger. Dilger, supporting the Third Division, was directed by General Schurz to position his battery as he saw fit between the Taneytown and Baltimore Roads.<sup>34</sup> Initially Dilger positioned only one of his sections, which immediately became engaged with a four-gun Confederate battery about 1400 yards to its front. This caused Dilger to bring up his remaining four Napoleons, all guns now firing at close to their maximum range of 1800 yards. With the Confederate battery reinforced by another four-gun battery, and soon thereafter a third, Dilger requested assistance from Major Thomas W. Osborn, the XI Corps artillery brigade commander. Major Osborn ordered Lieutenant Wheeler's 13th New York Battery forward to assist Dilger, under the control of the latter.<sup>35</sup> Wheeler's four 3-Inch guns quickly zeroed in on the Confederate batteries, relieving the pressure on Dilger and allowing him to advance his Napoleons forward several hundred yards.<sup>36</sup> Once in their new position, Dilger's guns provided covering fire for Wheeler as he moved his guns forward to a position on Dilger's right. In this position the two Union batteries continued their engagement with both enemy artillery and infantry, receiving mounting pressure from a Confederate infantry threat on their right flank. Both

batteries remained on the field, moving periodically to make it more difficult for the Confederate guns to put accurate fire on their position.<sup>37</sup> When the order was given for the infantry to withdraw, Dilger and Wheeler used the same technique they had used when they advanced, with each one providing cover for the other as they moved back.<sup>38</sup>

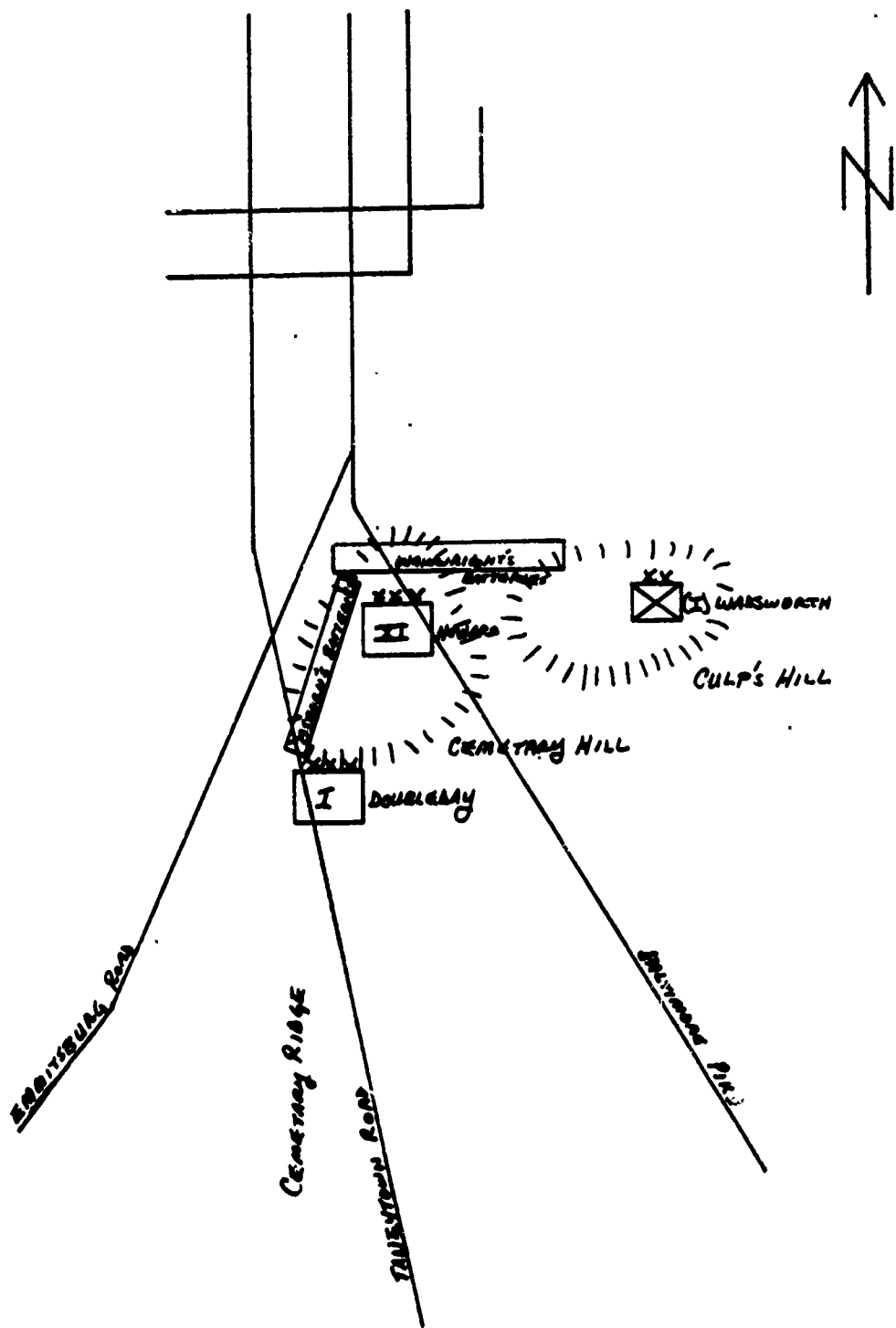
As Dilger and Wheeler supported the Third Division on the XI Corps' left, Battery G, 4th U.S. Artillery, commanded by Lieutenant Bayard Wilkeson, was providing support to General Barlow's First Division on the corps' right. General Barlow selected Wilkeson's position, placing two sections unusually close to the Confederate infantry lines north of the York road. Within minutes of moving into this position Lieutenant Wilkeson was mortally wounded, placing the command of Battery G into the lap of Lieutenant Bancroft. As was the case with Dilger and Wheeler, Bancroft found his battery in a duel with a numerically superior enemy artillery force and steadily advancing infantrymen. Predictably, the results were the same. Bancroft was forced to withdraw his battery as the First Division fell back in disarray.<sup>39</sup>

The withdrawal of XI Corps units through the town of Gettysburg created problems for the artillery batteries with their cannon, caissons and horses. The limited access into and through the town, combined with the apparent lack of control, resulted in mass confusion, forcing part of both Dilger's and Wheeler's batteries to provide covering fire for the divisions as they scrambled to stay ahead of the

pursuing Confederates.<sup>40</sup> Major Osborn directed Captain Lewis Heckman, commander of Battery K, First Ohio Light Artillery, to position his battery in support of the withdrawing Union forces. In executing this mission Heckman lost two of his Napoleons to Confederate infantry that swarmed over his position before he had time to fall back himself.<sup>41</sup>

By late afternoon on 1 July all of the I and XI Corps artillery batteries had taken up positions on Cemetery Hill. During the remainder of the day only a few shots were fired. General Ewell never attempted a serious assault on the Union position. Meanwhile, the Union artillery took stock of its losses in men, equipment and animals. The I Corps artillery brigade lost eighty-three men either killed or wounded along with eighty horses. Three of Wainwright's guns belonging to Captain Hall's battery had been dismounted and were no longer serviceable. The losses of Major Osborn's XI Corps artillery brigade were not as well documented, but were apparently not as severe as Wainwright's. Over the three day battle Osborn lost ninety-eight horses compared to the eighty Wainwright lost on the first day alone. The same situation holds true for personnel losses. Whereas Wainwright's brigade experienced a loss of eighty-three men on 1 July, Osborn lost only sixty-nine men during the entire battle. Osborn's brigade lost two guns during the first day's action. The replenishment of ammunition chests received top priority in





Artillery Positions, 1 July p.m.

both corps. Since the I Corps train had not yet arrived, both the I and XI Corps artillery brigades filled their ammunition chests from the XI Corps train as they prepared for the second day of battle.<sup>42</sup>

In analyzing the performance of the Union artillery during the first day of the battle, and assessing the significance of that performance, several aspects of the day's fight must be examined. One is the manner in which the artillery was employed. Another is its relationship with the forces it supported. Finally, the significance of its performance will require that it be measured against the outcome desired by the overall commander.

The artillery employed on 1 July was part of an organization less than sixty days old. The new artillery brigades showed promise, but problems experienced on the first day demonstrated how old habits are hard to break. An example is the method of artillery employment and position selection. As was previously discussed, one of the driving forces behind the organizational changes was the tendency for artillery assigned to divisions to be employed in a piecemeal fashion by the infantry commanders. These same officers had proven reluctant in the past to give up their artillery if it was determined that it could be better utilized somewhere else.

Maneuver commanders, both at division and corps level, generally allowed their artillery commanders to select positions for their guns, probably because of the respect

they had for the professional judgement of the artillery officers in matters relating to their field. In selecting positions the artillery commander was obligated to select one that would support the maneuver commander's scheme of maneuver. Therefore, batteries from the corps' artillery brigade which were supporting a division came under the control of the division commander. While both Wainwright and Osborn were responsible for implementing their corps commander's guidance on fire support, this apparently did not mean that division commanders within the corps could direct the artillery brigade's remaining batteries into action unless the artillery brigade commander consented. Colonel Wainwright's refusal to emplace a battery in a position when directed by the acting I Corps commander, General Doubleday, would at first glance appear to be a case of disobedience. In actuality this was a situation of an artillery commander advising a staff officer, who had transmitted the directive, of the unfeasibility of such an action, and that once the necessary infantry support was provided to the artillery, the fire support would be emplaced. General Doubleday did not pursue the situation, but provided the required infantry support and Wainwright provided the artillery. This would appear to be an example of a maneuver commander respecting the recommendations of his artillery specialist while demonstrating concurrently the authority which Wainwright exercised as the Corps' Chief-of-Artillery. Both Colonel

Wainwright and Major Osborn exercised considerable authority over their two brigades during the first day of the battle. Since neither rode with their corps' lead division though, the senior artillerymen there were the commanders of the batteries attached to the lead divisions.

Initially Lieutenant Calef was given the opportunity to select his own position by Colonel Gamble, the First Brigade commander of General Buford's cavalry division. Once in position he was ordered to move two of his sections by Buford himself. General Reynolds, acting as the commander of the field pending the arrival of General Meade, directed Captain Hall's battery into position when it was decided to relieve Calef's unit. Whether or not the generals felt the artillery officers were inexperienced and not qualified to select a proper position for their guns is impossible to say, but some infantry officers obviously had confidence in the battery commanders supporting their forces, for example Colonel Gamble of Buford's division. Another was General Schurz of the XI Corps. Schurz allowed Captain Dilger to position his battery, exhibiting thereby confidence in his artillery subordinate's ability to make a proper selection. General Barlow on the other hand, Schurz's First Division commander, selected the initial position of Battery G, 4th U.S. Artillery. Whether by mistake, or through a lack of understanding of proper artillery employment, two sections of Battery G were positioned too close to the Confederate lines. This resulted in the loss of the battery commander and forced

the withdrawal of the battery. It is possible the detailed positioning instructions given by several of the maneuver commanders is a result of the direct-fire nature of the artillery that was in use. The requirement to see the target that the battery was to engage may have forced some of the division and corps commanders to issue precise instructions to the artillery to ensure the batteries were emplaced in positions where they could engage the targets the maneuver commanders wanted.

Once the artillery brigade commanders arrived on the battlefield, both took an active role in the positioning of their batteries. Colonel Wainwright was especially involved. On two occasions he either deferred or refused to emplace artillery on a site selected by a maneuver commander. His decisions were based either on a lack of infantry support for the battery, or their needless exposure to enemy fire:

There appeared to be a lack of coordination between the infantry and artillery. Even though they were generally mutually supporting, the available reports give the impression that the communication between the two arms was minimal at best. In several instances on the first day the infantry would start falling back without notifying the artillery. This was most likely caused by having two separate chains of command on the line of battle. Since withdrawing a battery was more time consuming than pulling back infantry, being the last to know meant being the last to withdraw. This

resulted in lost horses and cannon as artillerymen scrambled to remove their guns out of the path of rapidly advancing Confederate infantry.

The lack of coordination between the infantry and artillery was just as evident at the higher echelons of authority. The failure for Colonel Wainwright to be informed of the field commander's intentions to hold Cemetery Hill at all costs, or to have it explained to him explicitly how Doubleday wanted that accomplished, nearly caused the loss of several batteries positioned on Seminary Ridge.

Throughout the first day at Gettysburg the artillery displayed techniques of tactical employment that are as appropriate today as they were then. With today's sophisticated means of locating opposing artillery, frequent moves will be the norm. Although the means of locating enemy artillery was strictly visual at Gettysburg, in the interest of self-preservation it became necessary to move frequently to survive. Captain Dilger and Lieutenant Wheeler constantly moved their batteries about in a field north of the town. This movement complicated the Rebel's efforts to place effective counter-battery fire on the Union batteries by requiring them to constantly reaim their guns. This no doubt reduced the Union guns' effectiveness as well since they had to physically pickup and move to new locations throughout the fight.

To determine the significance of the artillery's contribution to the first day's action it must be gauged

against what the field commander wanted to achieve. There is some conflict in the Official Records over what the original intentions were. The death of General Reynolds added to this confusion since it is difficult to determine exactly where he intended to defend, although it is believed that his intentions were to defend in the woods along McPherson Ridge.<sup>43</sup> Yet the senior officer on the field prior to General Howard's arrival, General Doubleday, in whose conversation with an unidentified person Wainwright apparently overheard the reference to holding Cemetery Hill, states in his official report that he had received orders from General Howard that it was indeed Seminary Ridge which was to be held.<sup>44</sup> But the increasing pressure from the north, and the gap of several hundred yards between the I and XI Corps made holding Seminary Ridge and the town of Gettysburg impossible. This forced a withdrawal to Cemetery Hill, a position which both General Howard and the commander of the II Corps, General Hancock, recognized as a strong one.<sup>45</sup>

Assuming that the withdrawal to Cemetery Hill was an acceptable one in terms of allowing the Union forces to establish a viable defense in which to conduct operations for the remainder of the battle, than the artillery's contribution was a positive one. It was successful in operating first with the cavalry, and then with the infantry in delaying and stopping the Confederate advance from the west. Although the XI Corps was unable to stop General Ewell's soldiers advancing

from the north, the artillery assigned to the XI Corps provided valuable covering fire for the infantry as it withdrew south through the town.

Posted on Cemetery Hill, the eleven Union batteries were still a considerable force to be reckoned with despite the day's losses. They, along with the Union cavalry and infantry, had successfully delayed the Confederates, securing strong defensive positions which the Army of the Potomac would exploit during the remainder of the battle. The Union artillery, combined with the oncoming darkness and supporting infantry, no doubt convinced Ewell that the discretionary orders directing him to assault the Union position had best not be followed.<sup>48</sup> This was fortunate as it allowed for the arrival of the rest of the Army of the Potomac with its remaining corps artillery brigades, and its formidable artillery reserve.



## CHAPTER 2

### ENDNOTES

<sup>1</sup>L. Van Loan Naisawald, Grape and Canister (New York: Oxford University Press, 1960), 334.

<sup>2</sup>Edwin B. Coddington, The Gettysburg Campaign (New York: Charles Scribner's Sons, 1968), 30-31. Edward G. Longacre, The Man Behind the Guns (New York: A.S. Barnes and Company, 1977), 150.

<sup>3</sup>Naisawald, 329.

<sup>4</sup>Ibid., 330.

<sup>5</sup>Ibid., 334.

<sup>6</sup>Coddington, 13, and Clifford Dowdey, Death of a Nation (New York: Alfred A. Knopf, Inc., 1963): 82-83.

<sup>7</sup>U.S. Department of War, The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies (Washington, D.C.: Government Printing Office, 1880-1901), Series I, Volume XXVII, Part 1, 1031 (hereafter cited as OR and unless otherwise noted refers to Series I).

<sup>8</sup>Ibid., 1031.

<sup>9</sup>Fairfax Downey, The Guns at Gettysburg (New York: David McKay Company, Inc., 1958), 20.

<sup>10</sup>OR, XXVII, 1, 927.

<sup>11</sup>Ibid., 359.

<sup>12</sup>Ibid., 245.

<sup>13</sup>Ibid., 359.

<sup>14</sup>Ibid., 1031.

<sup>15</sup>Ibid., 355.

<sup>16</sup>Ibid, 1031.

<sup>17</sup>Ibid., 355.

18Ibid.  
19Ibid., 364.  
20Ibid., 356.  
21Ibid.  
22Naisawald, 348.  
23Ibid., 348-349, and OR, XXVII, 1, 380.  
24OR, XXVII, 1, 380.  
25Ibid., 358.  
26Ibid., 356, 363.  
27Ibid., 361.  
28Ibid., 357.  
29Ibid., 357, 363.  
30Ibid., 698.  
31Naisawald, 355.  
32Ibid., 355 and OR, XXVII, 1, 727.  
33OR, XXVII, 1, 747.  
34Ibid., 754.  
35Ibid., 747.  
36Ibid., 752, 754.  
37Ibid., 748.  
38Ibid., 754.  
39Ibid., 748, 758.  
40Ibid., 754.  
41Ibid., 755.  
42Ibid., 748.  
43Ibid., 244.

<sup>44</sup>Ibid., 247.

<sup>45</sup>Ibid., 368, 696.

<sup>46</sup>OR, XXVII, 2, 445-446.

## CHAPTER 3

### GETTYSBURG - THE THIRD DAY

Day two of the battle saw the adjustment of lines and the arrival of the Army of the Potomac's remaining elements which would do battle on the decisive and final third day. Even though the action of July 2nd is not addressed in detail by this study, it would be wrong to not mention that both Union infantry and artillery fought well that day. Several artillery units fought desperate battles as they supported a failed attempt by Sickles' III Corps to occupy and hold terrain approximately 800 yards forward of the position that General Meade had originally intended them to occupy. Batteries belonging to the III Corps' artillery brigade and to the 1st Volunteer Brigade of the artillery reserve found themselves heavily engaged as the Confederates gained control of the Peach Orchard, the Wheatfield, and Devil's Den. In the Federal center Union artillery and infantry fought a determined Confederate force which enjoyed some success before Union counter-attacks regained lost ground. Union forces on the Federal right also participated in the day's action as General Ewell's Corps advanced against Union positions on Cemetery and Culp's hills.

Both the night of July 2nd and the early morning hours of the 3rd found artillery units of the Army of the

Potomac scrambling to repair the damage incurred on the 2nd. Chief among the missions for the night was the replenishment of ammunition chests. The ammunition trains of several corps had either failed to arrive or were positioned too far away for artillery units to resupply. It was at this time that General Hunt's special ammunition train which he had attached to his artillery reserve proved its worth. Designed to carry 250 rounds per gun for batteries in the reserve, it also carried an additional 20 rounds for every other gun in the army. Lieutenant Gillet, ordnance officer of the artillery reserve, reported issuing a total of seventy wagon-loads of ammunition during the night, with 10,090 rounds of ammunition issued to corps batteries alone.<sup>1</sup> This extra ammunition proved crucial in two ways. First, it provided ammunition to those corps batteries which had drastically depleted their stocks during the fighting of the 2nd and who would be involved again on the 3rd, most notably II Corps units. Second, it gave Hunt the confidence to assure Meade there was a sufficient quantity of ammunition available to engage Lee's army in battle, provided it was not wasted. This apparently allayed Meade's concerns about an ammunition shortage and the possibility of having to withdraw from the field.<sup>2</sup>

Several Union batteries were reorganized during the evening as part of the preparations for the third day of battle. Excessive losses in both men and horses forced these batteries to man four guns instead of the normal six.<sup>3</sup> Units in this category included B Battery, 1st Rhode Island

Artillery and B Battery, 1st New York Artillery. Other batteries had sustained such tremendous casualties that they were unable to participate in the fighting on the 3rd at all. These included the 9th Massachusetts Battery, the 4th New York Battery and I Battery, 5th U.S. Artillery.<sup>4</sup>

Fighting erupted early on the third. During the night General Meade had decided that the XII Corps would retake the ground on Culp's Hill lost the previous day to Ewell's Confederate troops. Artillery in support of this attack consisted of the XII Corps' artillery brigade of two batteries of 10-pounder Parrott rifles, four and six guns respectively, and two batteries of Napoleons, again one equipped with six guns and the other four. These twenty cannon conducted a fifteen minute preparation of the objective area commencing at 4:30 a.m., coinciding with the first light of dawn. Once the artillery had ceased firing, Union infantry moved forward only to run headlong into the advancing divisions of Ewell's Corps. The resulting fierce fighting necessitated a resumption of Union artillery support, this time augmented by the six 3-Inch Ordnance rifles of A Battery, Maryland Light Artillery, from the artillery reserve.

The absence of Confederate artillery allowed the Union gunners to engage enemy targets at will. The Confederate's inability or unwillingness to bring guns forward over the difficult terrain to support their attack

proved costly. By 10:30 in the morning the deadly effect of the Union artillery and infantry fire, combined with reinforcements, forced the Confederates off Culp's Hill to positions east of Rock Creek.

Once General Hunt was satisfied with the situation on Culp's Hill, he began a final inspection of the artillery positions along the entire front of the army's position. Of the 366 cannon that accompanied the Army of the Potomac and were located in the vicinity of the Gettysburg battlefield, Hunt estimated seventy-five were positioned where they could bring under effective fire Confederate troops crossing the open area west of Cemetery Ridge.<sup>5</sup> He also believed that a few of the fifty-five guns located on and around Cemetery Hill could assist those on the ridge in stopping a Confederate assault.

To the forty-three rifled cannon on Cemetery Ridge went the mission of counter-battery fire against the Confederate artillery, consisting of approximately 120 to 150 guns, now seen rolling out on the crest of Seminary Ridge. Hunt believed the movement of the Rebel artillery could have one of three possible meanings. One was to free Confederate infantry to support Ewell in his failing attack on Culp's Hill; another was to repel a Union assault should Meade go on the offense; and finally, it may signal an assault on the Union center.<sup>6</sup> Knowing Lee's offensive nature, Hunt subscribed to the latter and prepared the artillery forces accordingly. Hunt directed all Union artillery to wait

fifteen minutes before returning fire, and only then if it promised "adequate results," and to engage large targets of value, concentrating their fires on single batteries until the enemy guns stopped firing. Realizing that a Confederate cannonade would most likely be followed by an infantry assault, Hunt emphasized to the artillery brigade and battery commanders the need to not waste ammunition so there would be a sufficient quantity remaining to fire on the Rebel infantry.<sup>7</sup>

At approximately 1 p.m. two Rebel guns signaled for the start of what was to develop into one of the largest artillery cannonades of the war. Confederate guns fired continuously for almost two hours, concentrating the greater part of their fire on the Union center occupied by Hancock's II Corps. The Union artillery held its fire under the cascade of Rebel artillery shells, waiting the fifteen minutes before they replied.

The Rebel artillery fire was more impressive in terms of its visual display and the noise it produced than the effect it had on the Union forces. Emplaced on line on Seminary Ridge roughly parallel to the Union forces on Cemetery Ridge, the Rebel guns had more effect on Federal forces behind the ridge than on it. Lieutenant Colonel McGilvery, commanding the 1st Volunteer Brigade of the artillery reserve, reported that Confederate shells soared 20 to 100 feet over their position.<sup>8</sup> These shells created



havoc with the remaining batteries and trains of the artillery reserve in park east of Cemetery Ridge. After numerous caissons were destroyed and animals killed the reserve park was moved to a location safe from the Rebel fire.

This is not to say that Union artillery went unscathed. Several batteries on the Union right came under intense counter-battery fire from Confederate artillery that was able to enfilade their position on Cemetery Hill. Both sides claimed success in dealing with the other side's artillery, but as was often the case, claims of battlefield accomplishments were greatly exaggerated. The smoke produced by the cannon of both sides would have made it extremely difficult to both see targets to engage and then to assess the damage against those targets.

A controversial aspect of the return fire offered by the Union artillery concerned General Hancock's decision to have his II Corps' artillery open fire prematurely, at least in the opinion of General Hunt. It is true that the II Corps was receiving the brunt of the Rebel cannonade, causing Hancock some concern about his troops having to endure the enemy fire without the morale boosting benefit of hearing their own cannon in reply. Not only did he direct Captain Hazard, II Corps Artillery Chief, to return fire, he also attempted to have three of Lieutenant Colonel McGilvery's batteries from the reserve initiate a return fire.<sup>2</sup> The heavy volume of the II Corps' fire caused its batteries to

expend its shell and case so that all that remained in their ammunition chests as the Confederate infantry started their assault was canister. This prevented the II Corps batteries from engaging the Rebel infantry until it was within canister range, and was considered by Hunt to be the decisive factor in why the Confederates were able to momentarily break through the II Corps' line.<sup>10</sup> This dispute, along with Hancock's assertion that someone had removed artillery units from his line, leaving an unsupported gap, was a result of the question of who had tactical command authority over the corps artillery brigades on the battlefield.

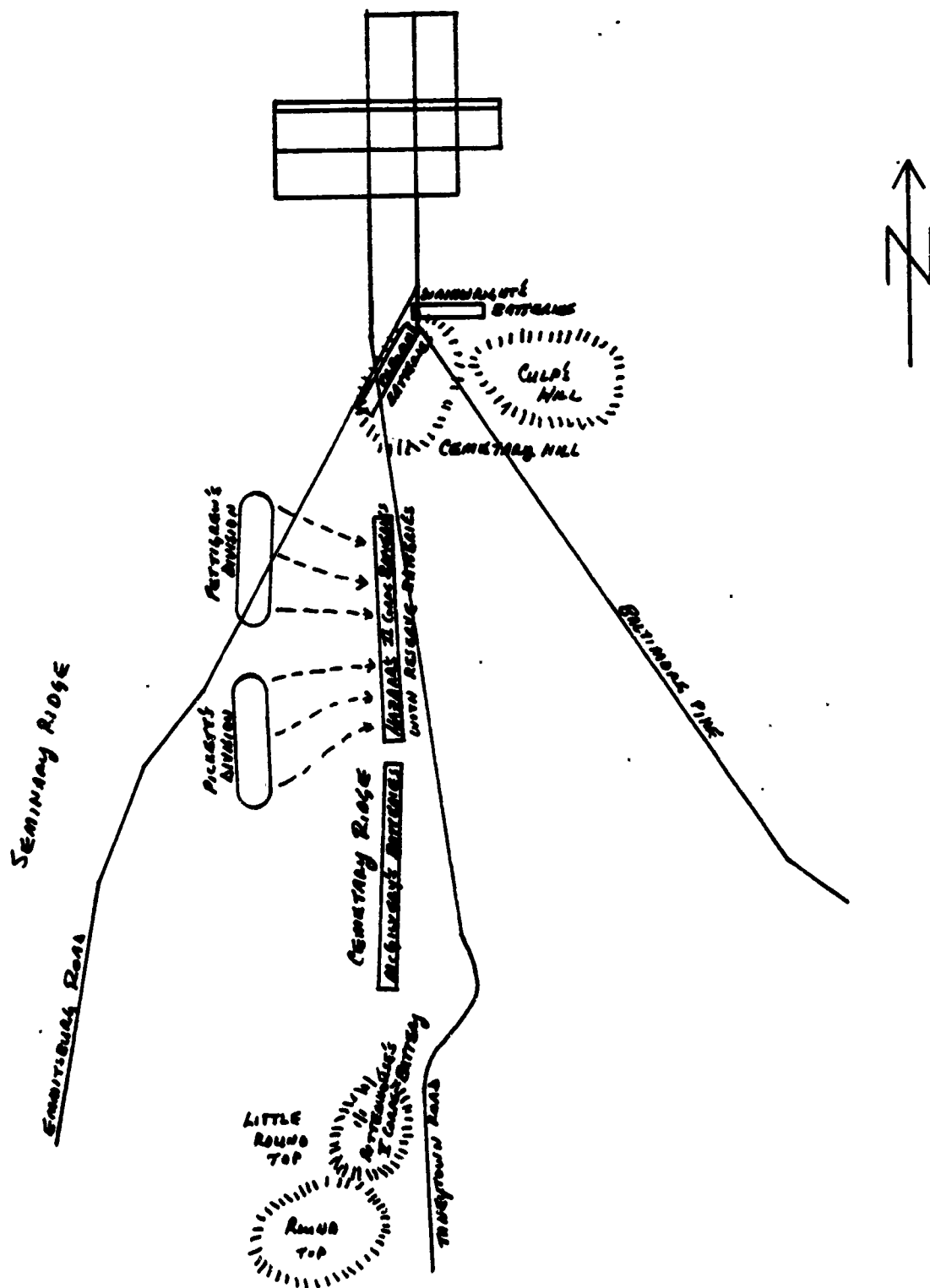
It is apparent that General Hancock believed artillery within his command was to be controlled by him and no one else.<sup>11</sup> It is also apparent that General Hunt believed he was more capable in determining how best to utilize all of the Army of the Potomac's artillery, including the brigade supporting the II Corps.<sup>12</sup> This confusion could in part be attributed to the rapid and frequent changes in the artillery organization of the army, along with the turmoil created by the numerous changes in the Army of the Potomac's commander. Although the army's first Chief-of-Artillery, Brigadier General William Barry, performed purely administrative duties for General McClellan, Barry's successor, Brigadier General Hunt, was given command authority over all of the artillery within the army.<sup>13</sup> Unfortunately, this description of Hunt's authority was never

placed in writing, leaving his exact duties to the interpretation and whims of McClellan's successors. Hunt's authority remained essentially unchanged when General Burnside took command, but it changed drastically under his successor, General Hooker. All that Hunt had achieved under McClellan regarding tactical command authority of artillery was stripped away by Hooker, leaving Hunt to fulfill only administrative duties. Orders to artillery units were passed through the army's adjutant general, bypassing Hunt altogether. Only after the mismanagement of artillery at Chancellorsville demonstrated to Hooker that he had erred did he restore Hunt to his former position of authority. When General Meade took over from Hooker there was insufficient time for Hunt to clarify his duties with the new army commander. The assignments given to Hunt by Meade, though, seemed to confirm that Hunt was indeed in command of the army's artillery. The perceived authority given to Hunt by Meade, along with past precedent, no doubt led Hunt to believe he had full authority over all artillery on the field.

As the artillery duel continued unabated for over an hour, Hunt became increasingly concerned about the expenditure of ammunition. Previous efforts at resupplying the more heavily engaged batteries had met with disaster as the caissons were destroyed or damaged from the Rebel fire as they moved forward. Feeling it was necessary to stop the firing in order to conserve the ammunition the batteries had

readily available, Hunt proceeded to get Meade's approval for calling a cease-fire. Unable to locate Meade, Hunt found General Howard and explained his concerns about the dwindling ammunition supplies. Howard agreed that the artillery units should stop their firing, which Hunt promptly directed.<sup>14</sup> This demonstrates that Hunt was concerned with the opinion of the infantry commanders and did not act capriciously in matters concerning the artillery. Hunt's decision soon received support as he received a message from Meade directing a cease-fire after Hunt had already done so. Unfortunately, the order arrived too late to prevent the II Corps batteries from expending all of their ammunition except canister.

Hunt's cease-fire order proved to be a wise one. Not only did it conserve the longer range ammunition that would allow the Union gunners to fire at the Rebel infantry before they moved into musket range, it also apparently convinced the Confederates that their artillery had been successful at driving off or silencing the Union artillery. Seeing what appeared to be artillery being pulled off the ridge, the Confederates stopped firing long enough to allow their infantry time to move forward toward the Union positions on Cemetery Ridge.<sup>15</sup> The Rebels then resumed their cannonade, again concentrating its efforts on the Union center.<sup>16</sup> As previously described, the II Corps' lack of long-range ammunition prevented them from firing at the advancing



Pickett's Charge, 3 July p.m.

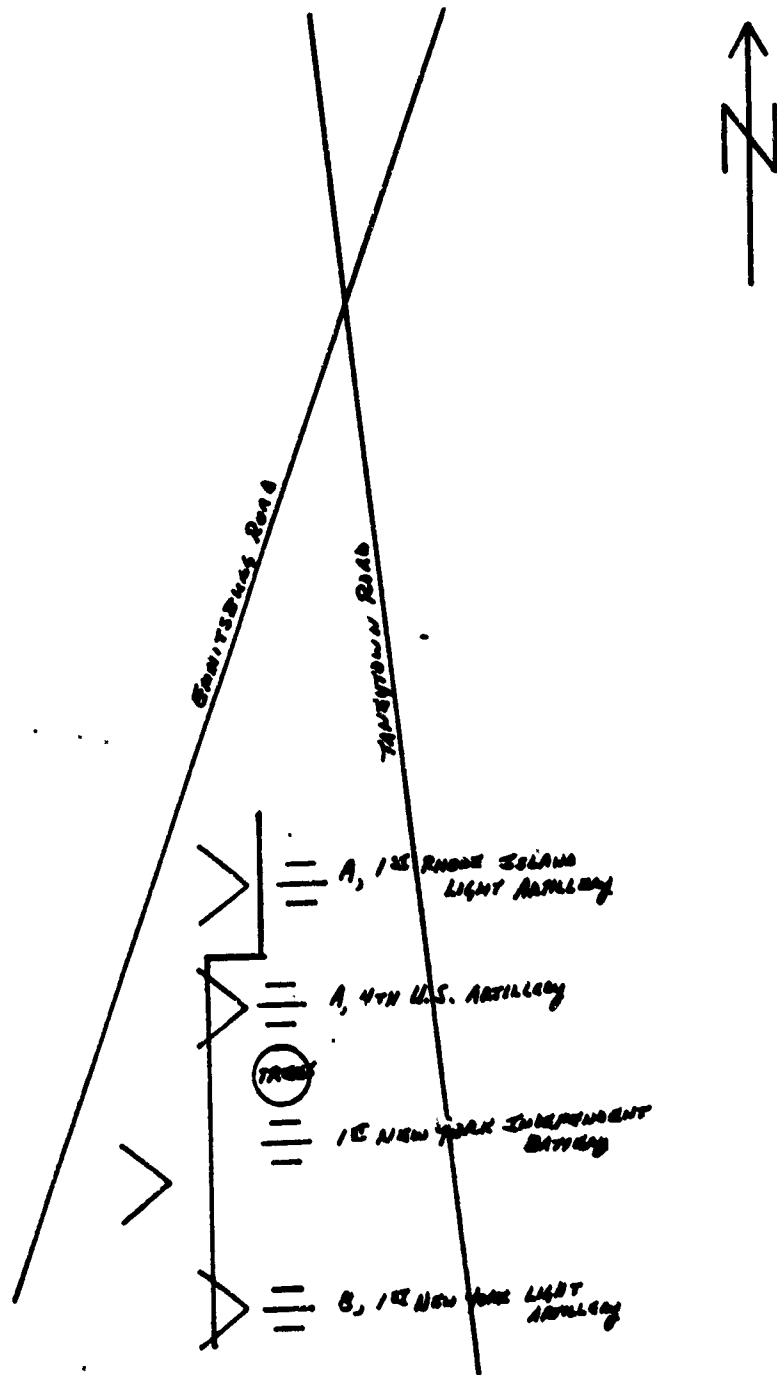
Confederate infantry until they reached positions about 300 yards from their guns. No such restrictions kept other Union guns from firing. Smoke covered the ridgelines and the field, obstructing the gunners' fields of view and reducing to guesswork the siting on a target.

The advancing Rebel infantry confirmed General Hunt's earlier suspicions that an enemy assault would be directed against the Union center. The brief lull in the Confederate artillery fire made it possible for Hunt to issue orders directing that four artillery reserve batteries be brought forward across the ridgeline which only minutes before had been saturated with exploding Rebel shells. These batteries were ordered to reinforce the center of the Union line. Hunt then moved to Lieutenant Colonel McGilvery's position on the II Corps' left. Here he instructed McGilvery to redirect his guns toward the right, thus enabling his batteries to enfilade the advancing Confederates right flank.<sup>17</sup> Hunt believed it was this enfilading fire that caused the Rebel lines to drift to their left as they attempted to distance themselves from the deadly fire of McGilvery's batteries.<sup>18</sup> When the enemy infantry approached to within 300 yards of the crest both the Union infantry and the II Corps artillery opened fire, unleashing a withering fire of minie balls and canister shells.

It was in the vicinity of what is referred to as the Angle that the fiercest fighting of the afternoon took place. As Confederate infantry approached the low stone wall marking

the leading edge of the Union positions, the reserve batteries earlier ordered forward by Hunt made their timely arrival into the gaps between II Corps units. These batteries were K Battery, 1st New York Artillery, A Battery, 1st New Jersey Artillery, C Battery, 5th U.S. Artillery, and the 1st New York Independent Battery. Rebel infantry successfully breached the II Corps line at several points, inflicting substantial damage upon several artillery batteries in the immediate vicinity. A Battery, 4th U.S. Artillery, the 1st New York Independent Battery, and B Battery, 1st New York Artillery all found themselves swarming with enemy infantry as gunners were forced into hand-to-hand fighting within their battery positions. All three batteries suffered numerous casualties before the combined fire of the artillery batteries in the II Corps' sector and the flanking fire of the 8th Ohio Infantry Regiment of the II Corps, and Brigadier General Stannard's 3rd Brigade of the I Corps threw back the remnants of Generals Pickett's and Pettigrew's divisions.<sup>19</sup>

General Hunt immediately began to restore the combat power of the artillery in the Union center as the Confederates began to fall back toward their lines. The casualties sustained by several batteries necessitated that they be removed entirely from the field. B Battery, 1st New York, A Battery, 1st Rhode Island, and A battery, 4th U.S. were all removed from the field and replaced with batteries from the artillery reserve.<sup>20</sup> As already noted, General



The Fight at the Angle



Hancock sent General Meade a message shortly after the repulse of the Confederate assault complaining about the unauthorized removal of twelve guns from his line which, in his opinion, could have been disastrous if Hancock had "worse troops" with which to plug the gap.<sup>21</sup> Again, the question of who has authority over the artillery assigned to a corps becomes an issue. Although Hancock failed to identify the batteries that he believed were withdrawn, or name a person that may have been responsible, a study of the official records reveals that at least two of the three previously mentioned batteries, and possibly the third, were removed from the fighting before the Rebel assault was repelled, and not replaced until the assault was turned back.<sup>22</sup> As to what degradation their removal had on the fire support available to the II Corps; it would appear there was none. All three batteries had sustained such severe losses in men, equipment and horses that they were essentially combat ineffective. Captain Hazard, II Corps Chief-of-Artillery, reported that both A Battery, 1st Rhode Island Artillery, and A Battery, 4th U.S. Artillery had expended all of their ammunition in addition to their high losses.<sup>23</sup> It is therefore extremely doubtful that at the point in the battle they were contributing to the Federal effort to repel the Rebel assault. Hazard makes no mention of who directed the removal of these batteries, though the wording in his official report clearly indicates he supported, if not ordered, their removal to prevent the capture of the

guns. In view of the hostility between Generals Hancock and Hunt, it is likely it was Hunt that Hancock had in mind when he wrote that message to Meade.

Other batteries on the line hurriedly sent caissons to the rear as they resupplied their ammunition chests and prepared for another Rebel assault. As Hunt continued his inspection of artillery units on the Union left he noticed movement of Confederate troops, Wilcox's brigade, as they formed in front of McGilvery's batteries in an apparent attempt to support the now repelled assault by Pickett's division. After giving instructions to McGilvery directing him to be prepared to fire upon the formation once it began to move, Hunt returned to the II Corps' area and instructed the batteries there, most of which belonged to the artillery reserve, to engage the enemy's left flank once he moved into the open. As Wilcox's brigade advanced the Union artillery did as instructed, rapidly breaking this last Confederate assault before it reached the Union line.<sup>24</sup>

During the course of the day's battle the Union artillery demonstrated its effectiveness as a member of a combined arms team fighting a position defense. The nature of Civil War field artillery weapons required that to be effective in the attack they had to maneuver in concert with the infantry. The devastating effect of the rifled musket on artillery limited offensive use of cannon to long-range engagement of targets with projectile and fuze combinations

that were sometimes less than effective. Poorly functioning Bormann time fuzes plagued the Confederates at Gettysburg as shell and case rounds either detonated prematurely, or not at all. This resulted in both being used as solid shot, with considerably less effect. Combined with the imprecise targeting resulting from poor visibility created by the smoke of the cannonade the effect of both sides' long-range counter-battery artillery fire was not instrumental in determining the battle's outcome. The Union's ability to position its artillery in selected positions and to use canister against exposed infantry proved that the defensive use of artillery was more effective than the offensive measures employed by the Confederate artillery.

The superiority of artillery in the defense at Gettysburg was not the only factor which affected the overall contribution of the Union artillery to the Federal victory. The inability of the Rebel artillery to put out of action their Union counterparts was significant. Although several Union batteries on Cemetery Hill and units behind the crest of Cemetery Ridge sustained serious damage, the Rebels failed to place effective fire on the batteries which could do them the most harm, namely those in the Union center.<sup>25</sup> The Confederate gunners were already handicapped by defective ammunition. Further complicating their situation was their position on Seminary Ridge placing them parallel to the guns firing in support of the Union center on Cemetery Ridge. These positions made it extremely difficult to achieve the

correct range since the slightest change or error in gun tube elevation would easily cause the round to pass over a target that did not have much depth.

The Confederates were relying upon their artillery to force the Union batteries off Cemetery Ridge before they would attack.<sup>26</sup> Their misinterpretation of why the Union guns had ceased firing and the movement they saw on Cemetery Ridge led them to believe they had been successful, and provided the trigger which launched the famous assault. A shortage of available ammunition prevented Colonel Alexander, General Longstreet's Chief-of-Artillery, from sending more than eighteen guns forward with the assaulting infantry. The Rebel artillery which had remained on Seminary Ridge was also low on ammunition and could not resupply quickly since the trains were located too far away. The end result was ineffective artillery support of the Confederate infantry at a time when they needed it most.<sup>27</sup>

The situation that presented itself on the third day was the opportunity for the new artillery brigade organization to prove its worth. The centralized control of artillery at corps level was instrumental in many of the successes enjoyed not only by the Union artillery, but by the Army of the Potomac as a whole. No longer was artillery parceled out to the divisions, a past habit that made it virtually impossible to mass fires or respond to critical situations in a timely manner. Key to the success of the

artillery brigade was the control exercised by the brigade commander, and of course, the army's Chief-of-Artillery, General Hunt. One can only speculate how effective the Union artillery's system would have been if a less aggressive man had occupied the army's top artilleryman's post. Hunt's penchant for producing an effective artillery organization and making independent decisions no doubt set the tone for how his subordinate artillery commanders conducted themselves.

Even though no formal document existed which outlined the respective functions and authority of the artillery brigade commanders, the position made the brigade commander as the Chief-of-Artillery of the corps and the principal advisor to the corps commander on artillery matters. The only drawback to this reorganization, and one which Hunt fought to correct, was the inadequate rank structure which accompanied the position. It was certainly easier for an artillery brigade commander who was a colonel to affect a situation, especially one involving a sister arm, than it would have been for a Lieutenant or Captain, ten of which were brigade commanders at Gettysburg.

The artillery brigade commander, free of having to concern himself with the control of any one battery, was able to concentrate his efforts on the brigade as a whole. The brigade commander's larger perspective freed the corps and division commanders from becoming heavily involved in artillery matters, allowing them to devote more time to fighting their maneuver forces as the artillery brigade

commander focused on providing the maneuver commander with the fire support he needed.

Probably the best example of the benefits provided by the artillery brigade concept was that of Lieutenant Colonel McGilvery's 1st Volunteer Brigade of the artillery reserve. McGilvery stubbornly exercised command not only over his batteries, but several others placed under his control, all of which were positioned to the immediate left of the II Corps' line. McGilvery's energetic leadership style and skill in employing artillery were apparent to his subordinates and evident in the manner in which he fought his batteries. Lieutenant Dow, commander of the 8th Maine Battery, commented in his official report that McGilvery was constantly moving up and down the line of batteries encouraging his men by words and example.<sup>28</sup> McGilvery's decision to hold his fire even after General Hancock attempted to order three of his batteries to open fire probably prevented them from expending their long-range ammunition as happened to the II Corps batteries. This ammunition proved crucial when the Rebels launched their infantry assault. It was with this ammunition that McGilvery's command was able to enfilade the right flank of the advancing Confederates. The ability to rapidly shift the direction of fire of his cannon to enfilade the assaulting infantry's right flank was facilitated by the centralized control exercised by the artillery brigade commander.

Hunt had originally planned on subjecting the enemy infantry to a crossfire of Union cannon. Unfortunately, the expenditure of all ammunition except canister by II Corps artillery units prevented the rightmost player of his crossfire strategy from participating.<sup>29</sup> Hancock's post battle criticism of the ammunition supply for his artillery batteries was unjustified.<sup>30</sup> If his batteries were "imperfectly supplied" as he described in his official report, it is through no fault of the General Hunt or the ammunition train of the artillery reserve. Hancock admits in the same report that only one-half of his corps' ammunition train had been brought forward, and that the corps was having to rely on those of other corps.<sup>31</sup> II Corps batteries received ammunition from the artillery reserve amounting to 2,825 rounds. This equates to about 100 rounds per gun for those batteries in the corps artillery brigade. This is significant when one remembers that Hunt had intended, through his initiative only, that the artillery reserve train would supply only an additional twenty rounds of ammunition per gun in the army.<sup>32</sup> Hancock's batteries ran out of ammunition for two reasons. First, his batteries fired too early and for too long on the third of July against the wishes of General Hunt, and second, the corps failed to bring half of its ammunition train close enough to the battlefield to allow it's ammunition to be of use.

The artillery reserve proved its value on 3 July. Not only did the extra ammunition it carried provide an

invaluable assistance to those corps who failed to bring all or part of their trains forward, but its batteries replaced damaged corps units and augmented the fires of corps units in threatened sectors, specifically II Corps' sector. The ability to weight the center sector was crucial since this is where the Confederates concentrated their efforts on 3 July. The insertion of fresh batteries from the reserve prior to the assault presented essentially an undamaged artillery force to the Confederates that was no worse for wear from the long cannonade which preceded the assault. Despite the losses incurred by the artillery during the battle, additional artillery batteries were inserted in the Union center to strengthen the Union line after the repulse of the Rebel infantry as the Federals prepared for a possible second attack.

Losses for the artillery at Gettysburg were substantial. Over the course of the three day battle 105 officers and men lost their lives, while 632 were either wounded or missing. The loss of 881 horses added to the carnage on the battlefield. The artillery expended approximately one-third of its ammunition. The expenditure of 32,781 rounds out of a supply of over 98,000 left a substantial quantity available should General Meade have decided to continue operations.<sup>33</sup>

The new artillery organization had demonstrated its effectiveness on the battlefield during its first test by



fire. Yet this was also its last opportunity to perform as it was designed. At no other time throughout the remainder of the war did the Army of the Potomac face an opponent across an open field with massed forces and hundreds of cannon. But as a testimony to its effectiveness is the fact that for the remainder of the war this organization remained unchanged.

## CHAPTER 3

### ENDNOTES

<sup>1</sup>U.S. Department of War, The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies (Washington, D.C.: Government Printing Office, 1880-1901), Series I, Volume XXVII, Part 1, 874 (hereafter cited as OR and unless otherwise noted refers to Series I).

<sup>2</sup>Edward G. Longacre, The Man Behind the Guns (New York: A.S. Barnes and Company, 1977), 160-161.

<sup>3</sup>Ned Bradford, Battles and Leaders of the Civil War (New York: Appleton-Century-Crofts, Inc., 1956), 384-385.

<sup>4</sup>L. Van Loan Naisawald, Grape and Canister (New York: Oxford University Press, 1960), 410.

<sup>5</sup>OR, XXVII, 1, 238.

<sup>6</sup>Bradford, 385.

<sup>7</sup>OR, XXVII, 1, 238.

<sup>8</sup>Ibid., 883-884.

<sup>9</sup>Ibid., 884.

<sup>10</sup>Naisawald, 439.

<sup>11</sup>OR, XXVII, 1, 366.

<sup>12</sup>Bradford, 387.

<sup>13</sup>Naisawald, 440.

<sup>14</sup>OR, XXVII, 1, 239.

<sup>15</sup>Bradford, 395.

<sup>16</sup>OR, XXVII, 1, 239.

<sup>17</sup>Ibid.

<sup>18</sup>Bradford, 386.

19OR, XXVII, 1, 350, 457.

20OR, XXVII, 1, 239.

21Ibid., 366.

22Ibid., 239.

23Ibid., 480

24Ibid., 240.

25Bradford, 386.

26Ibid., 395.

27Ibid., 396-397.

28OR, XXVII, 1, 898.

29Bradford, 386-387.

30OR, XXVII, 1, 373.

31Ibid., 372.

32Longacre, 159.

33OR, XXVII, 1, 241.

## CHAPTER 4

### ANALYSIS AND CONCLUSIONS

The Battle of Gettysburg concluded with Lee's Army of Northern Virginia retiring from the fields surrounding Gettysburg while his opponent, General Meade, allowed him to escape. This reluctance to pursue Lee raised the ire of many in Washington, just as had General McClellan's before. The army had suffered a substantial number of casualties. Approximately 23,000 Union soldiers were either killed, wounded, or missing. This amounted to 27% of the Army of the Potomac's total force. Compared to the Confederate's 21,000 casualties, 29% of their force, the margin for victory was indeed narrow.<sup>1</sup>

The army's artillery losses amounted to approximately 10% of its artillery personnel strength. Yet losses in equipment were relatively light as only five or so batteries were rendered combat ineffective during the three day battle.<sup>2</sup> The remaining sixty plus batteries and 80,000 rounds of ammunition left the Army of the Potomac a formidable artillery force. That the army failed to pursue Lee was in no way a reflection on the artillery's ability to provide the necessary support, which it was more than capable of doing.

The performance of the Army of the Potomac's artillery at Gettysburg demonstrated the correctness of the

reorganization after Chancellorsville. This is especially significant in light of the fact that Gettysburg was its first test by fire, and after only an extremely short period of time.

Certainly the Union army's success at Gettysburg cannot be solely attributed to the efforts of its artillery. Nor could the infantry claim sole responsibility for the victory. That to which the Army of the Potomac owes its success at Gettysburg is the successful interaction and mutual support demonstrated on the battlefield by its cavalry, infantry and artillery. What differed between Gettysburg and previous battles was the significant positive contribution the artillery made to the Union victory.

To say the artillery reorganization that took place in May of 1863 was alone responsible for the artillery's successful showing would also be inaccurate. To evaluate the artillery's performance it must be reviewed in the context of the situation in which it found itself on 1-3 July 1863. Certainly the fact that the Union forces were defending while the Confederates were attacking is in itself significant. As far as the artillery was concerned, it demonstrated at Gettysburg, as it had on previous Civil War battlefields, that it was more suited to the defense than the offense. This was true for several reasons. One was that the attacker was the one required to move, invariably exposing him at some point to the fire of the defending force's rifled muskets and artillery. Unlike their infantry counterparts, artillery

gunners moving forward with the infantry could not lie down to seek cover in the face of a defender's fire. To employ an artillery weapon effectively in the offense as it moved toward the defender's position required the gun's crew to stand erect as they manned their gun, exposing themselves to whatever fire the defenders sent their way. There is no doubt that gun crews who found themselves in this situation were not aiming their weapons as carefully as they might. Movement and emplacement time reduced the amount of time an artillery weapon would be available to fire.

Another problem which plagued both the Union and Confederate forces at Gettysburg was the relatively ineffective use of long-range fire. It was ineffective in the sense of the casualties it produced and the impact those casualties and damage had on the battle's outcome. Long-range firing as was practiced on the third day of the battle was of little consequence to the situation unless one views the Confederate's inability to force the Union artillery off of Cemetery Ridge during their cannonade as a plus for the Federals. Firing at the upper limit of their range capabilities, Union artillery could not place effective fire on the Confederate columns until they moved out of the protective woodline on Seminary Ridge. It was at this point in the battle that artillery batteries posted on Cemetery Hill made their contribution to the effort to repel the Rebel assault. Several batteries were able to fire at the advancing

infantry's left flank, decimating the ranks of both Colonel Brockenbrough's and Brigadier General Davis' brigades. The flanking fire proved very effective in preventing these brigades from reaching the Union positions as they were both reduced to a disorderly mass of men retreating back to their own lines.<sup>3</sup> Claims of dismounting Rebel guns were made, and although some were probably accurate, at the distances involved and with the battlefield covered with smoke, it would have been difficult enough to locate a target to shoot at, let alone do a damage assessment. The Rebels viewed the return fire of the Union guns as generally scattered and ineffective.<sup>4</sup> An exception was the counter-battery fire of Captain Taft's 5th New York Battery of 20-pounder Parrott rifles. Posted on Cemetery Hill with guns pointed both north and west, Taft's battery used its heavy long-range cannon to good effect, silencing several Rebel batteries both before and during the cannonade.<sup>5</sup>

The majority of casualties caused by the artillery at Gettysburg were achieved at close range using shell, case and canister. Canister employed against exposed, advancing infantry was devastating on both the first and third days of the battle. As the Union and Confederate forces fought a meeting engagement on the first day, the reliable canister round was used with great effect by the Union batteries of both Lieutenant Calef and Captain Hall as they, along with other batteries, cavalry and infantry, successfully delayed to successive positions, buying time for the arrival of other

Union forces. The Confederates on the first day, as on the third, were generally taking the initiative and conducting offensive operations. Only in a few instances were Rebel batteries required or able to fire its most reliable and devastating projectile. In the offense it was required to move within 400 yards of the defending forces. On both the first and third days of the battle, but especially the third during Pickett's charge, this would have required a lengthy exposure to the Union defender's fire for the horses, men and equipment.

The defensive strengths of artillery were further enhanced by the situation at Gettysburg. The Union artillery's artillery reserve ammunition train and reserve batteries were positioned close enough to the line of battle that ammunition resupply and the insertion of fresh batteries could be affected relatively quickly. This was done both before the start of the Rebel cannonade, just prior to the infantry assault, and immediately after its repulse. The result was essentially no degradation of Union artillery forces throughout the afternoon of the third day.

The organizational changes directed in Special Orders No. 129 were significant and positively enhanced the Union artillery's performance on the first and last day of the battle. It corrected one of the basic deficiencies which had persisted throughout the history of the Army of the Potomac. The problem of the misuse of artillery when assigned to and



controlled by divisions has already been previously addressed. The organization of corps artillery brigades under the control of a brigade commander prevented the piecemeal employment of the artillery at Gettysburg. The brigade structure centralized the artillery of a corps under (...) artilleryman who in turn provided the corps commander the artillery support he required. Even on the first day both Colonel Wainwright and Major Osborn, artillery brigade commanders for the I and XI Corps, demonstrated control over subordinate batteries as they positioned the batteries during the battle to support the infantry. Their authority was particularly evident as the first day drew to a close. Both positioned their batteries on Cemetery Hill to support the army's defense of that position.

While the brigade organization provided for more centralized control of artillery assets than was practiced previously, it was not over-centralized. The centralized control allowed for the brigade to respond as a whole, given the constraints of the types of communication of the day and the necessary response time to carry out orders. The brigade system was made workable by the placement of an artillery officer in the brigade commander's position. This one officer assumed the responsibility for employing his entire brigade in a manner which supported the corps commander's plan of maneuver. On 1 July I Corps' batteries, under the watchful eye of Colonel Wainwright, were positioned on Seminary Ridge as he prepared to make a stand on the position he believed

was to be held. As was previously mentioned, both Wainwright and Osborn controlled the positioning of their batteries on the evening of the first. Performed under the direction of one man, and with that man an artilleryman, each of the two brigades was sure to be placed in position correctly, with the individual battery positions selected in terms of their integration into and support of the brigade as a whole.

The brigade organization facilitated the massing of the fires of the batteries in the brigade onto single targets. From the earliest days of Napoleon, who introduced massed artillery fire on a large-scale, it was demonstrated that concentrating the fires of several batteries on single targets was more effective than the dispersed fire of several batteries on several different targets. Lieutenant Colonel McGilvery's 1st Volunteer Brigade exhibited this ability on several occasions. On the third McGilvery actively focused the efforts of his batteries against single targets. The most significant example was that of his order, in compliance with Brigadier General Hunt's directive, to shift the fire of his batteries to their right to enfilade the Confederate infantry's right flank as they approached the Union line.

Of equal significance to the artillery brigade in contributing to the Union artillery's success at Gettysburg was the performance of the artillery reserve. Its nineteen batteries of 110 guns played an invaluable part during the battle, most notably on the final day. The reserve provided

the army commander, through his Chief-of-Artillery, a means to either replace damaged batteries with fresh ones from the reserve, to augment the fires of corps batteries in threatened sectors, or to perform missions that could not be tasked to corps batteries. On the third of July reserve batteries fulfilled all three functions.

The concept of the artillery reserve was a function of technology. Since the field artillery weapons in use by the Army of the Potomac were direct fire line-of-sight weapons which needed to be placed in sight of their target, space limitations prevented putting all available artillery forward to engage the Confederates, either during the cannonade or the assault. The modern artillery weapon's indirect fire capability allows for it to be positioned in depth, taking more of a two dimensional approach to positioning than the one dimensional linear option which was available to the Army of the Potomac's guns on Cemetery Ridge. General Hunt's estimation that only about seventy-five guns would be able to take under effective fire Rebel infantry that crossed the fields west of the ridge is one indication of the crowded conditions which existed. With a density of approximately 26,000 men per mile, it is not surprising Hunt could not place all of his artillery on line.<sup>6</sup>

Of no small importance to the Union artillery's success was the contribution of its Chief-of-Artillery, Brigadier General Henry J. Hunt. From the time he was first

commissioned as a Second Lieutenant in the Field Artillery, to when he left the service, he was constantly displaying ingenuity, foresight, and initiative in artillery matters. The artillery brigade and reserve organizations detailed in Special Orders No. 129 were his ideas. At Gettysburg Hunt saw his concepts on artillery usage come to fruition, even though the lack of artillery staff officers and inequities in the rank structure were still significant problems in his eyes.<sup>7</sup> It was through his aggressive leadership that reserve batteries quickly replaced damaged ones, and that batteries were quickly resupplied with ammunition after the Union forces repelled Pickett's troops. In an attempt to conserve ammunition Hunt had dictated the conditions upon which Union batteries would return fire during the cannonade. He also was the first to realize the ineffectiveness of the Union return fire and the dwindling ammunition supplies, recommending that the firing cease to save ammunition for what he believed would be the inevitable infantry assault.<sup>8</sup> And it was Hunt who planned on subjecting the assaulting Confederates to a crossfire from the army's guns as he personally directed McGilvery to shift the guns of his command to the right.

All throughout the battle at Gettysburg, from the meeting engagement on 1 July, to the defensive battle on the last day, the Union artillery played a critical role as a member of a combined arms team. This study determined that the artillery's successful employment at Gettysburg can be

directly attributed to its reorganization after the Chancellorsville debacle, and to the strong leadership of Brigadier General Henry Hunt, without whom the changes that proved successful would not have been implemented. How the newly reorganized Army of the Potomac's artillery would have performed on other battlefields is open to speculation, as never again was its artillery employed in mass. Its effectiveness in the defense on the terrain south of Gettysburg was clearly demonstrated in July of 1863. How it would perform in the offense had General Meade been the attacker and General Lee the defender is a subject beyond the scope of this thesis and should be considered for possible future study.

## CHAPTER 4

### ENDNOTES

<sup>1</sup>Paddy Griffith, Battle in the Civil War (Mansfield, England: Fieldbooks, 1986), 46.

<sup>2</sup>L. Van Loan Naisawald, Grape and Canister (New York: Oxford University Press, 1960), 446.

<sup>3</sup>U.S. Department of War, The War of The Rebellion: A Compilation of the Official Records of the Union and Confederate Armies (Washington, D.C.: Government Printing Office, 1880-1901), Series I, Volume XXVII, Part 2, 651 (hereafter cited as OR and unless otherwise noted refers to Series I).

<sup>4</sup>Ibid., 352.

<sup>5</sup>OR, XXVII, 1, 891.

<sup>6</sup>Griffith, 19.

<sup>7</sup>OR, XXVII, 1, 242-243.

<sup>8</sup>Ibid., 239.

## **APPENDICES**

## APPENDIX A

### WEAPON RANGE DATA

TYPE	MODEL	CAL.	ELEVATION	RANGE
6 Pdr Gun	1841-44	3.67"	5 degrees	1,525 yds
12 Pdr Gun	1841-44	4.62"	5 degrees	1,660 yds
12 Pdr How	1841-44	4.62"	5 degrees	1,070 yds
12 Pdr Gun	1857	4.62"	5 degrees	1,680 yds
3-Inch Ordnance	N/A	3.00"	16 degrees	4,180 yds
10 Pdr Parrott	N/A	3.00"	35 degrees	6,200 yds
20 Pdr Parrott	N/A	3.67"	15 degrees	4,500 yds

SOURCE: William H. Frank, William F. Barry, and Henry J. Hunt, Instruction for Field Artillery, (Washington, D.C.: Government Printing Office, 1864).



## APPENDIX B

### BARRY'S PRINCIPLES OF ARTILLERY ORGANIZATION

1. "That the proportion of artillery should be in the ration of at least two and a half pieces to 1,000 men, to be expanded if possible to three pieces to 1,000 men."

2. "That the proportion of rifled guns should be restricted to the system of the U.S. Ordnance Department, and of Parrott and the smooth bore (with the exception of a few howitzers for special service) to be exclusively the 12-pounder gun of the model 1857, variously called the "gun howitzer," the "light 12-pounder," or the "Napoleon."

3. "That each field battery should, if practicable, be composed of six guns, and none to be less than four guns, and in all cases the guns of each battery should be of uniform caliber."

4. "That the field batteries were to be assigned to divisions and not to brigades, and in the proportion of four to each division, of which one was to be a battery of regulars, the remainder of volunteers; the captain of the regular battery to be the commander of artillery of the division. In the event of several divisions constituting an army corps, at least one-half of the divisional artillery was to constitute the reserve artillery of the corps."

5. "That the artillery reserve of the whole army should consist of 100 guns, and should comprise, besides a sufficient number of light mounted batteries, all of the guns of position, and until the cavalry was massed all the horse artillery."

6. "That the amount of ammunition to accompany the field batteries was not to be less than 400 rounds per gun."

7. "A siege train of fifty pieces. This was subsequently expanded (for special service at the siege of Yorktown) to very nearly 100 pieces, and comprised the unusual calibers and enormously heavy weight of metal of two 200-pounders, five 100-pounders, and ten 13-inch sea-coast mortars."

8. "That instruction in the theory and practice of gunnery, as well as in the tactics of the arm, was to be given to the officers and non-commissioned officers of the volunteer batteries by the study of suitable text-books and by actual recitations in each division, under the direction of the regular officer commanding the divisional artillery."

9. "That personal inspections, as frequent as the nature of circumstances would permit, should be made by me, to be assured of the strict observance of the established organization and drill and of the special regulations and orders issued from time to time under the authority of the commanding general, and to note the progressive improvement of the officers and enlisted men of the volunteer batteries, and the actual fitness for field service of the whole, both

regular and volunteer."

SOURCE: U.S. Department of War, The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies (Washington, D.C.: Government Printing Office, 1889), Series I, Volume XIV, Part 1, 67. These principles were included in the report of Brigadier General William F. Barry, Chief-of-Artillery, Army of the Potomac, of the organization and operations of the artillery of that army from July 25, 1861, to September 1, 1862.

## APPENDIX C

### SPECIAL ORDER NO. 129

I. "In consequence of the reduction of the strength of the infantry of the divisions, a consolidation and reduction of the artillery attached to army corps will be affected.

The artillery assigned to each corps will constitute a brigade, under the command of the chief of artillery of the corps for its command and administration.

The following-named batteries, now serving with divisions of this army, will report without delay to Brig. Gen. Robert O. Tyler, commanding Artillery Reserve:

Batteries E and G, First U.S. Artillery, Captain Randol commanding; Battery H, First U.S. Artillery, Lieutenant Sanderson commanding; Batteries F and K, Third U.S. Artillery, Lieutenant Turnbull commanding; Battery C, Fourth U.S. Artillery, Lieutenant Thomas commanding; Battery C, Fifth U.S. Artillery, Captain Ranson commanding; Battery D, Fifth U.S. Artillery, Lieutenant Hazlett commanding; Battery F, Fifth U.S. Artillery, Lieutenant Martin commanding; Battery B, First New York Artillery, Captain Pettit commanding; Battery G, First New York Artillery, Lieutenant Anes commanding; Battery K, First New York Artillery, Captain Fitzhugh commanding; First New York

Independent Battery, Captain Cowan commanding; Tenth New York Independent Battery, Captain Bruen commanding; Eleventh New York Independent Battery, Captain von Puttkammer commanding; Battery F, First Pennsylvania Artillery, Lieutenant Ricketts commanding; Battery G, First Pennsylvania Artillery, Captain Ansdan commanding; Third Independent Pennsylvania Battery, Lieutenant Fleming commanding; Fourth Independent Pennsylvania Battery, Captain Thompson commanding; Battery A, First New Hampshire Artillery, Lieutenant Edgell commanding; Battery A, First Maryland Artillery, Captain Rigby commanding; Battery E, First Massachusetts Artillery, Captain Phillips commanding; Battery H, First Ohio Artillery, Captain Huntington commanding; Battery C, First [West] Virginia Artillery, Captain Hill commanding; Sixth Independent Maine Battery, Lieut. E.B. Dow commanding; Battery G, First Rhode Island Artillery, Captain Bloodgood commanding."

II. "The under-mentioned field officers of artillery will report to Brig.Gen. R.O. Tyler, commanding Artillery Reserve:

Major Tompkins, First Rhode Island Artillery; Major De Peyster, First New York Artillery; Major McGilvery, Maine Artillery; Major Matthews, First Pennsylvania Artillery."

III. "The batteries remaining with the corps will be completed to a thorough state of efficiency (with the number of guns they now have) by the transfer of sufficient of such men of the remaining [other] batteries of the corps as are attached from the infantry."

IV. "The artillery ammunition train of the batteries attached to corps will be organized, and placed under the direction of the commander of artillery of the corps; the surplus will be transferred to the Artillery Reserve."

SOURCE: U.S. Department of War, The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies (Washington, D.C.: Government Printing Office, 1880-1901), Series I, Volume XXV, Part 2, 471-472.

## APPENDIX D

### UNION ARTILLERY AT GETTYSBURG

Artillery Reserve: Brigadier General Tyler

1st Regular Brigade: Captain Ransom

H, 1st U.S.	- 6 12-pdr Napoleons
F/K, 3rd U.S.	- 6 12-pdr Napoleons
C, 4th U.S.	- 6 12-pdr Napoleons
C, 5th U.S.	- 6 12-pdr Napoleons

Total: 24 guns

1st Volunteer Brigade: Lieutenant Colonel McGilvery

5th Mass. Btry & 10th N.Y.	- 6 3-inch rifles
9th Mass. Btry	- 6 12-pdr Napoleons
15th New York Btry	- 4 12-pdr Napoleons
C/F, Penn. Light Artillery	- 6 3-inch rifles

Total: 22 guns

2nd Volunteer Brigade: Captain Taft

B, 1st Conn. Heavy Artillery	- 4 4.5-inch rifles
M, 1st Conn. Heavy Artillery	- 4 4.5-inch rifles
2nd Conn. Light Battery	- 4 James rifles & 2 12-pdr Napoleons
5th New York Btry	- 6 20-pdr Parrott rifles

Total: 12 guns (Both batteries of 4.5-inch rifles did not accompany the brigade to Gettysburg.)

3rd Volunteer Brigade: Captain Huntington

1st New Hampshire Btry	- 6 3-inch rifles
H, 1st Ohio	- 6 3-inch rifles
F/G, 1st Penn. Light Artillery	- 6 3-inch rifles
C, W. Virginia Light Artillery	- 4 10-pdr Parrott

rifles

Total: 22 guns

4th Volunteer Brigade: Captain Fitzhugh

6th Maine Btry	- 6 12-pdr Napoleons
A, Maryland Light Artillery	- 6 3-inch rifles
A, New Jersey Light Artillery	- 6 10-pdr Parrott rifles
G, 1st New York	- 6 12-pdr Napoleons
K, 1st New York	- 6 3-inch rifles

Total: 30 guns

Artillery reserve total: 110 guns and 19  
batteries (not including  
the 2 4.5-inch batteries).

Corps Artillery Units:

I Corps Artillery Brigade: Colonel Wainwright

2nd Maine Btry	- 6 3-inch rifles
5th Maine Btry	- 6 12-pdr Napoleons
L, 1st New York	- 6 3-inch rifles
B, 1st Penn. Light Artillery	- 4 3-inch rifles
B, 4th U.S.	- 6 12-pdr Napoleons

Total: 28 guns

II Corps Artillery Brigade: Captain Hazard

B, 1st New York	- 4 10-pdr Parrott rifles
A, 1st Rhode Island	- 6 3-inch rifles
B, 1st Rhode Island	- 6 12-pdr Napoleons
I, 1st U.S.	- 6 12-pdr Napoleons
A, 4th U.S.	- 6 3-inch rifles

Total: 28 guns

III Corps Artillery Brigade: Captain Randolph

B, New Jersey Light Artillery	- 6 10-pdr Parrott rifles
D, 1st New York	- 6 12-pdr Napoleons
4th New York Btry	- 6 10-pdr Parrott rifles



E, 1st Rhode Island	- 6 12-pdr Napoleons
K, 4th U.S.	- 6 12-pdr Napoleons

Total: 30 guns

V Corps Artillery Brigade: Captain Martin

C, Mass. Light Artillery	- 6 12-pdr Napoleons
C, 1st New York	- 4 3-inch rifles
L, 1st Ohio	- 6 12-pdr Napoleons
D, 5th U.S.	- 6 10-pdr Parrott rifles
I, 5th U.S.	- 4 3-inch rifles

Total: 26 guns

VI Corps Artillery Brigade: Colonel Tompkins

A, Mass. Light Artillery	- 6 12-pdr Napoleons
1st New York Btry	- 6 3-inch rifles
3rd New York Btry	- 6 10-pdr Parrott rifles
C, 1st Rhode Island	- 4 3-inch rifles
G, 1st Rhode Island	- 6 3-inch rifles
D, 2nd U.S.	- 6 12-pdr Napoleons
G, 2nd U.S.	- 6 12-pdr Napoleons
F, 5th U.S.	- 6 10-pdr Parrott rifles

Total: 46 guns

XI Corps Artillery Brigade: Major Osborn

I, 1st New York	- 6 3-inch rifles
13th New York Btry	- 4 3-inch rifles
I, 1st Ohio	- 6 12-pdr Napoleons
K, 1st Ohio	- 4 12-pdr Napoleons
G, 4th U.S.	- 6 12-pdr Napoleons

Total: 26 guns

XII Corps Artillery Brigade: Lieutenant Muhlenberg

M, 1st New York	- 4 10-pdr Parrott rifles
E, Penn. Light Artillery	- 6 10-pdr Parrott rifles
F, 4th U.S.	- 6 12-pdr Napoleons
K, 5th U.S.	- 4 12-pdr Napoleons

Total: 20 guns

Cavalry Corps:

1st Brigade: Captain Robertson

9th Michigan Btry - Not found  
6th New York Btry - 6 3-inch rifles  
B/L, 2nd U.S. - Not found  
M, 2nd U.S. - 10 3-inch rifles  
E, 4th U.S. - 4 10-pdr Parrott rifles

2nd Brigade: Captain Tidball

E/G, 1st U.S. - Not found  
K, 1st U.S. - 6 3-inch rifles  
A, 2nd U.S. - 6 3-inch rifles  
C, 3rd U.S. - 6 3-inch rifles  
H, Penn. Heavy Artillery - 2 3-inch rifles (attached)

Cavalry Corps total: 50 3-inch rifles

Army of the Potomac totals: 366 guns and 65  
batteries.

SOURCES: U.S. Department of War, The War of the Rebellion: A compilation of the Official Records of the Union and Confederate Armies (Washington, D.C.: Government Printing Office, 1880-1901) Series I, Volumes XXV and XXV, in the Official Reports of Brigadier General Henry J. Hunt. L. Van Loan Naisawald, Grape and Canister (New York: Oxford University Press, 1960), 553-556.

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